

Nancy 1973

ETUDE DE L'ADSORPTION EN LIT FLUIDISE

DE TRACES D'ANHYDRIDE SULFUREUX

CONTENUS SANS UN EFFLUENT GAZEUX.

FIGURES

Samuel ELMALEH

Ingénieur des Industries Chimiques

1973



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FIGURES

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CHAPITRE I

FIG: 1

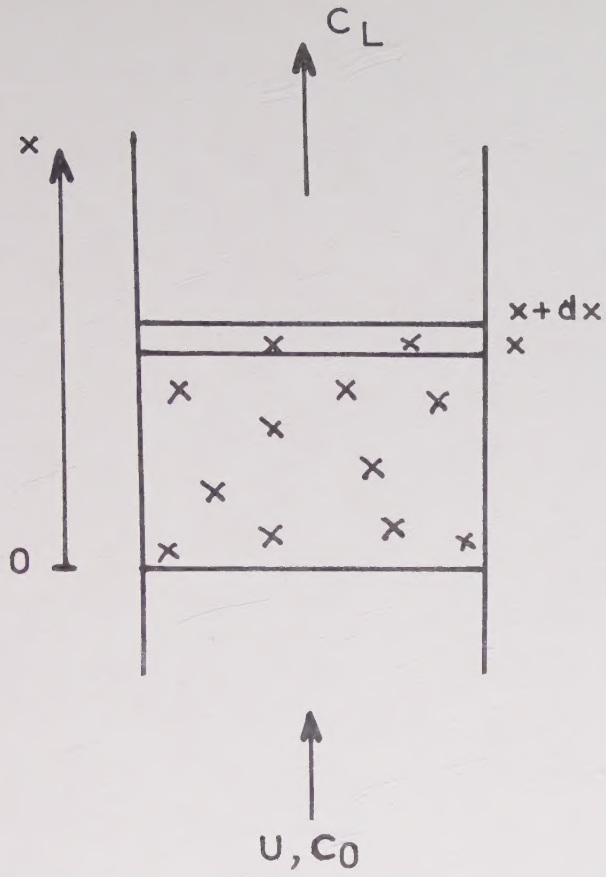
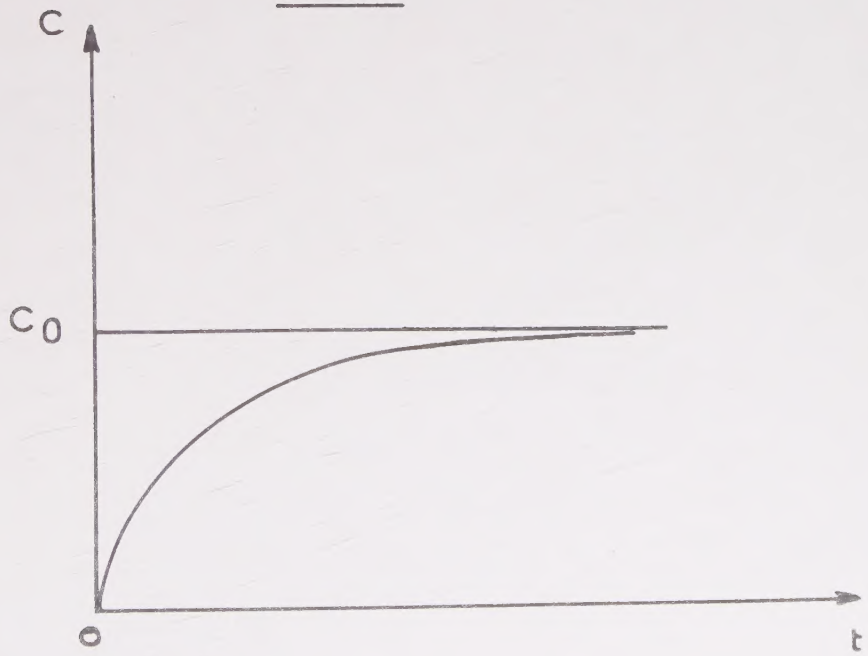
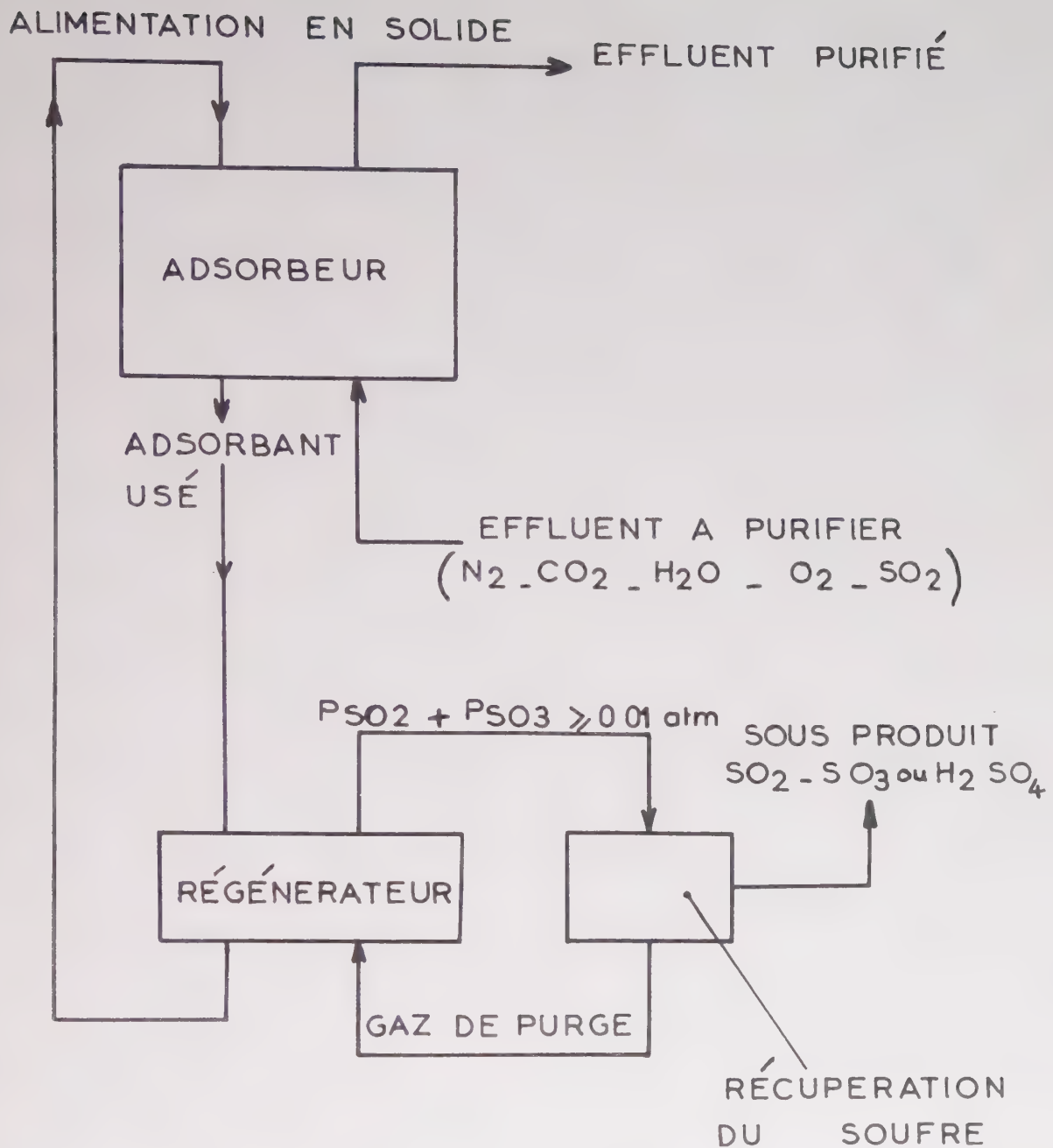


FIG: 2



CHAPITRE II

FIG:1



CHAPITRE III

FIG: 1 SCHEMA D'ENSEMBLE

- ① COMPRESSEUR ② DESHUIEUR ③ COLONNE DE
 SECHAGE ④ ROTAMETRE ⑤ PRECHAUFFAGE
 ⑥ TUYÈRE D'INJECTION ⑦ SONDE ⑧ CYCLONE
 ⑨ DEBIMETRE A CAPILLAIRE ⑩ MANOMETRE
 ⑪ HUMIDIFICATEUR ⑫ PSYCHROMÈTRE
 ⑬ INJECTION DE SO₂

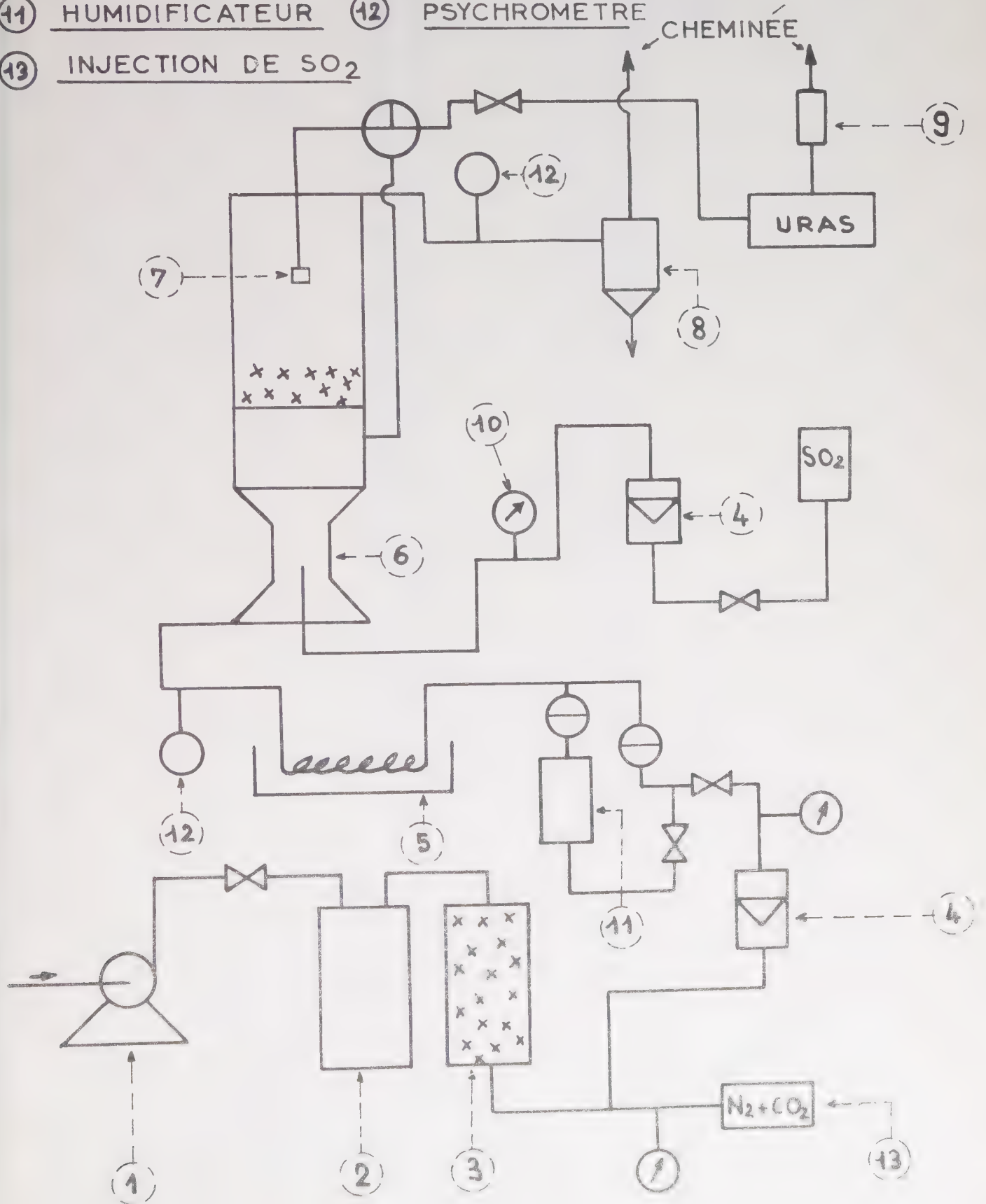
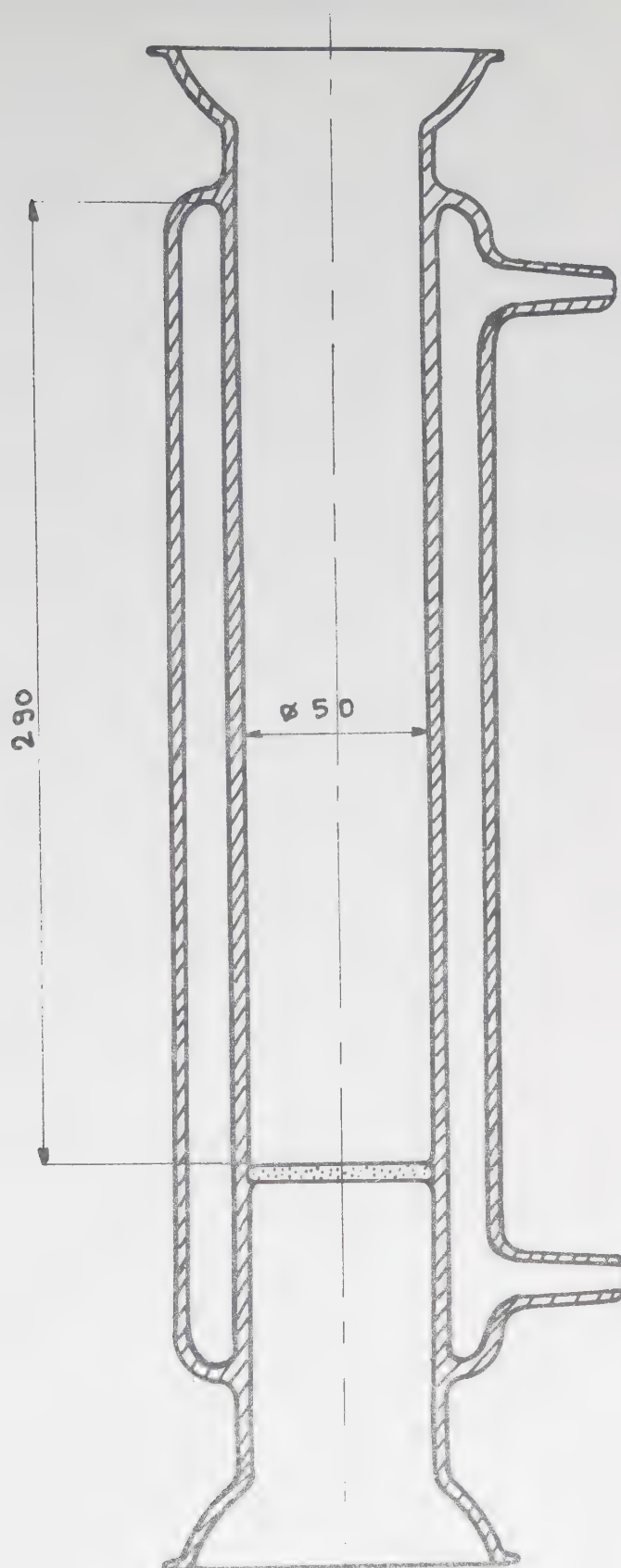


FIG:2 SCHEMA DU REACTEUR



ECHELLE $\frac{1}{2}$

FIG: 3 PERTE DE CHARGE

DANS LA COLONNE A VIDE

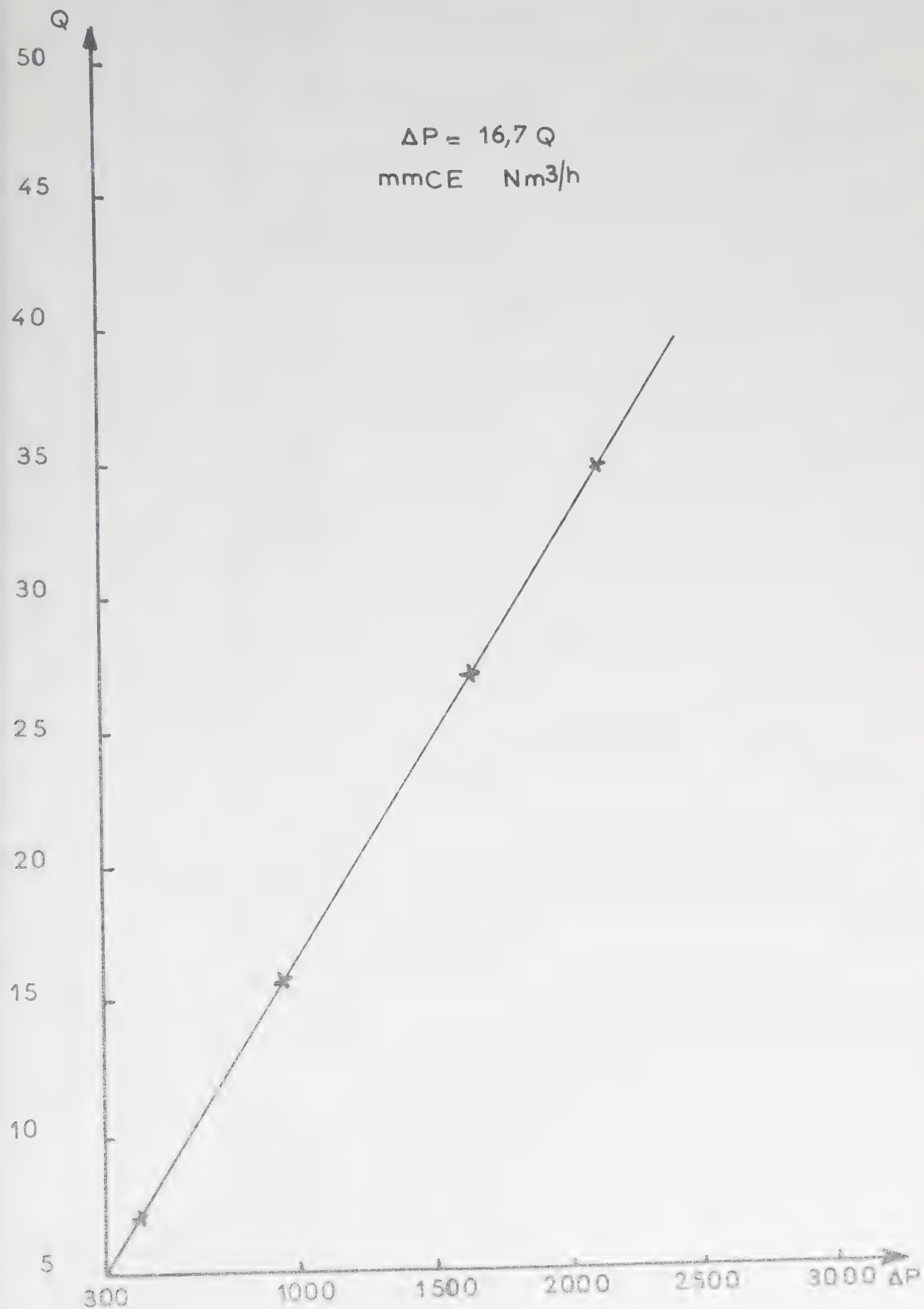


FIG 4
COLONNE D'HUMIDIFICATION

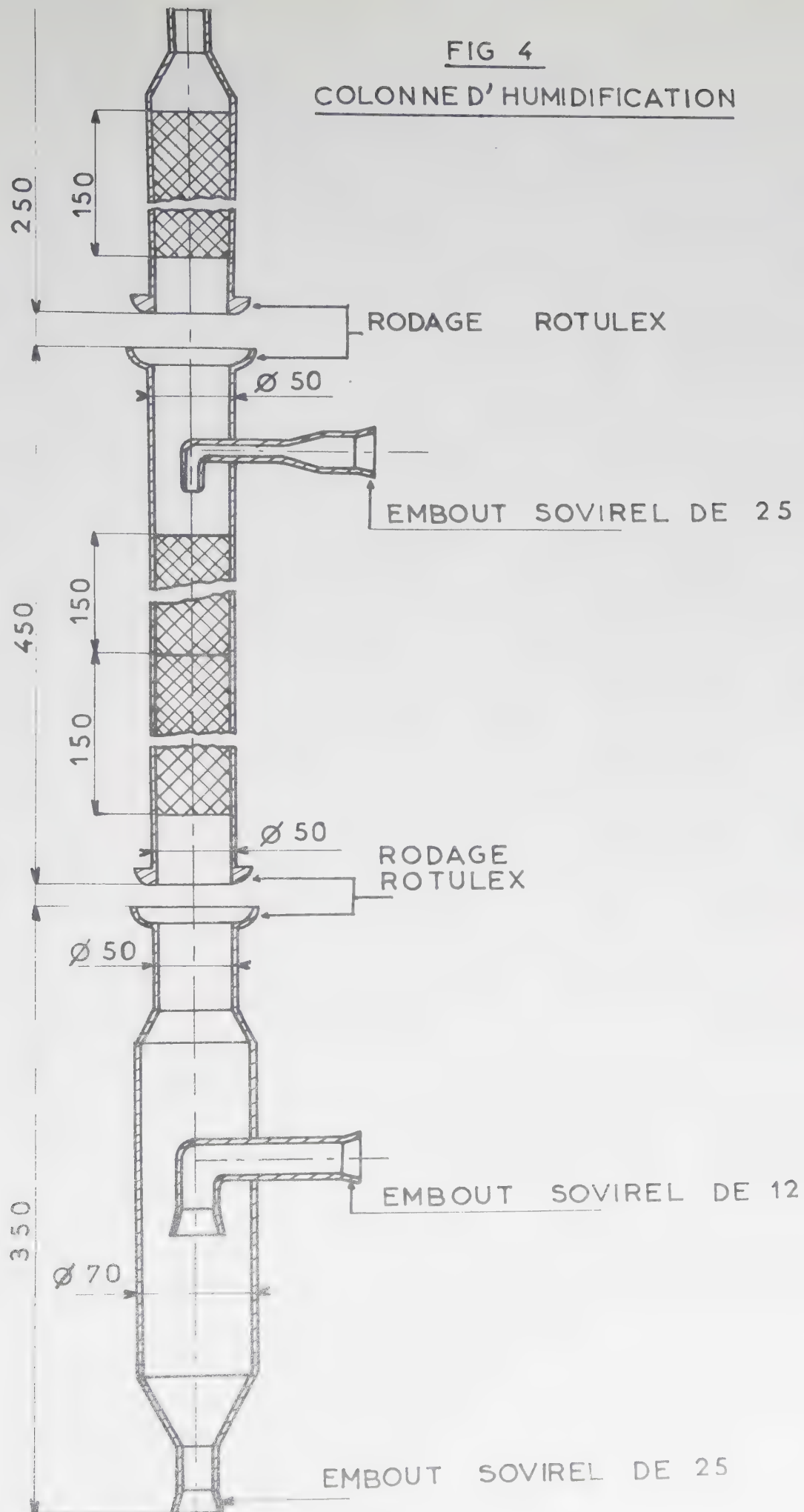


FIG:5 CIRCUIT D' HUMIDIFICATION

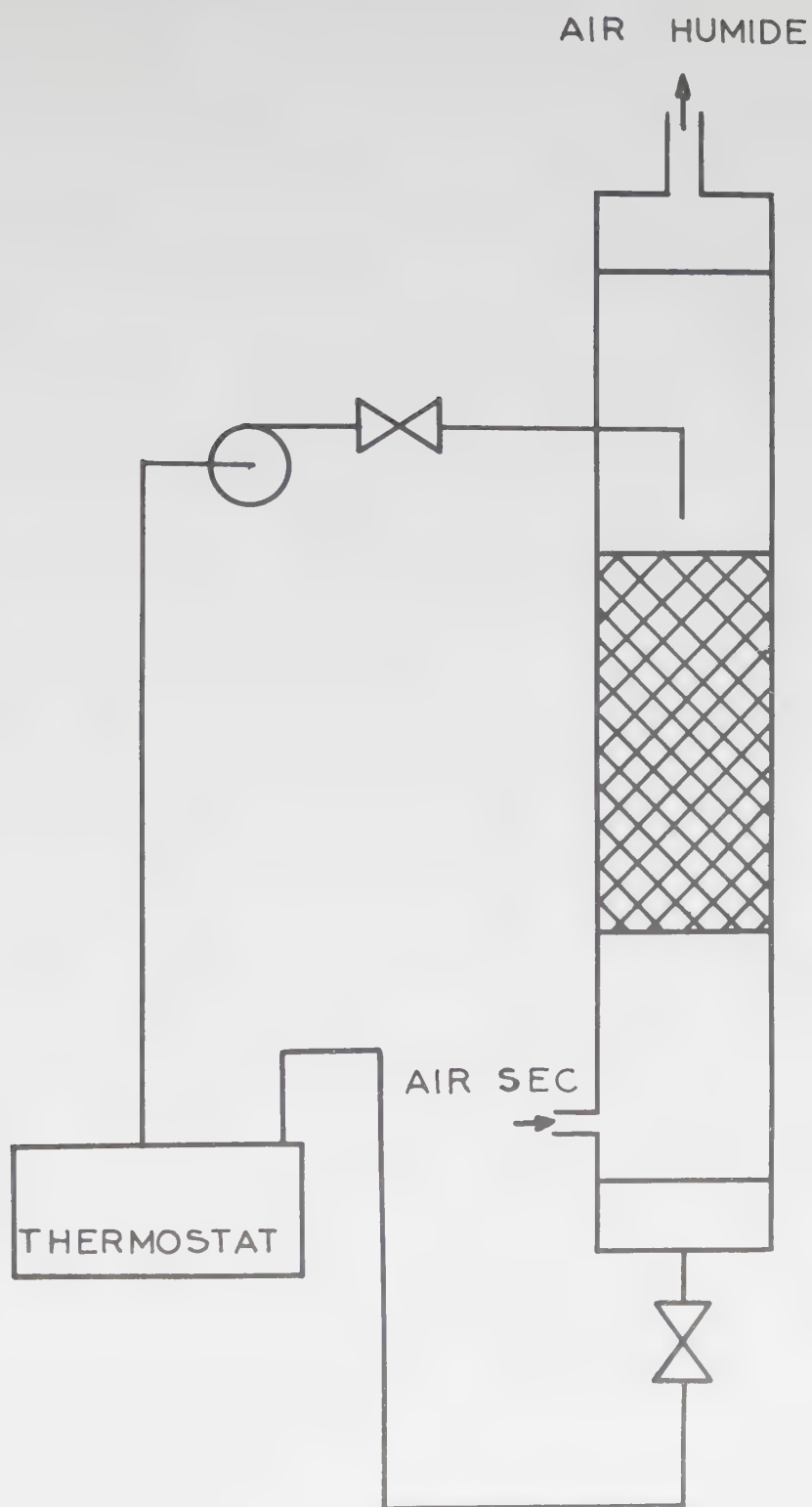


FIG: 6 SOURCE DE SO_2

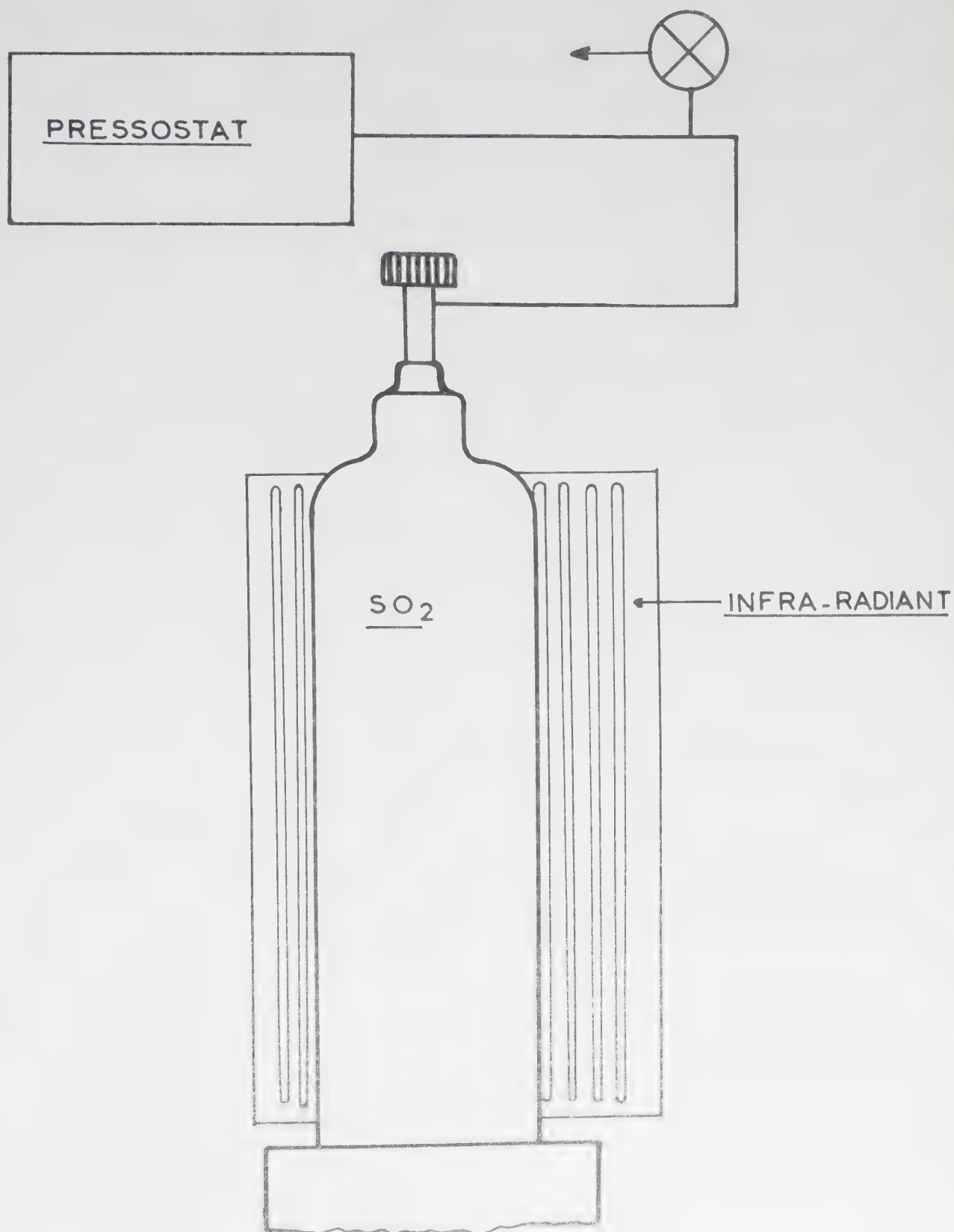


FIG:7 TUYERE D'INJECTION

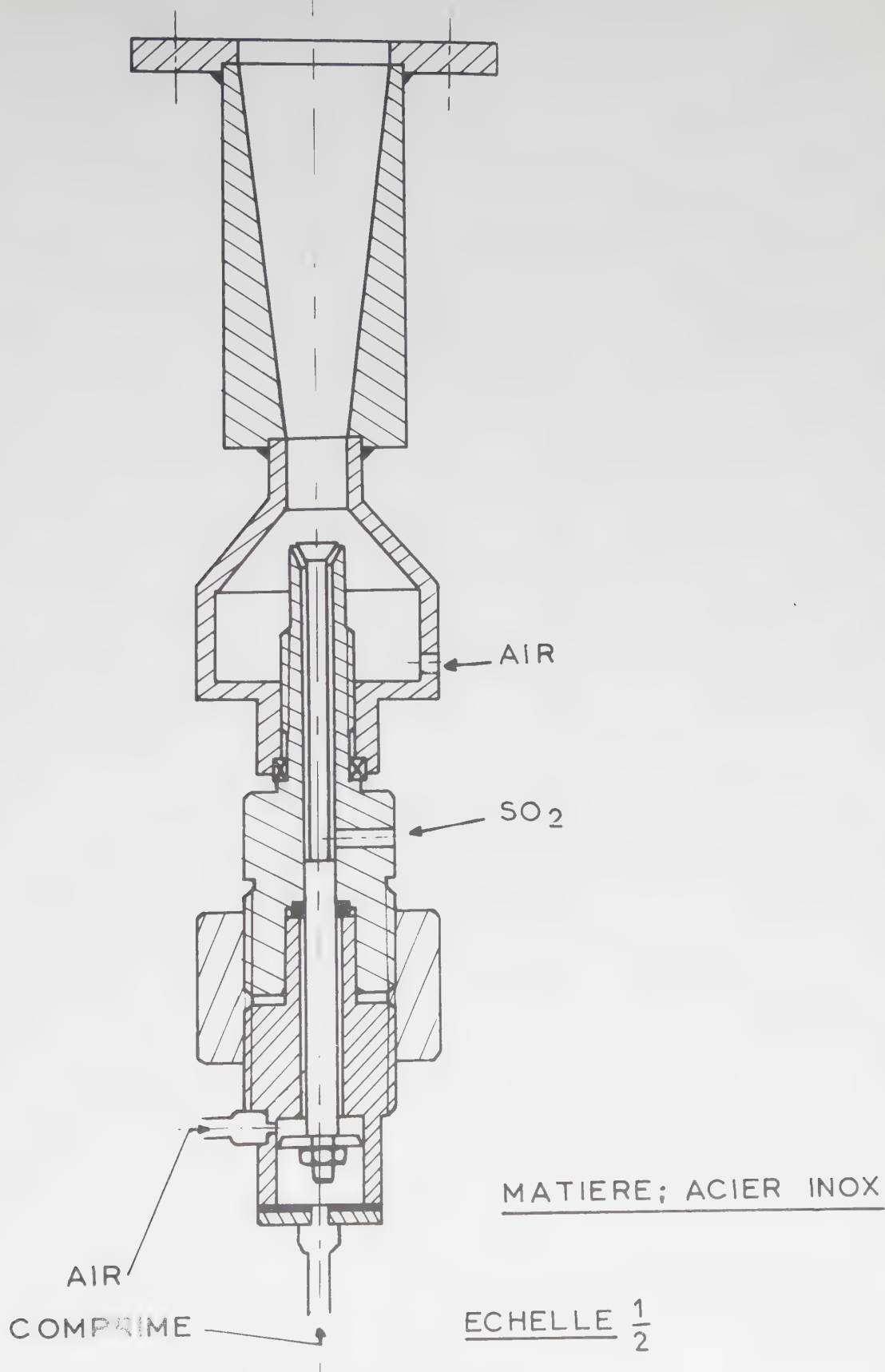


FIG:8 PRISE D'ÉCHANTILLON

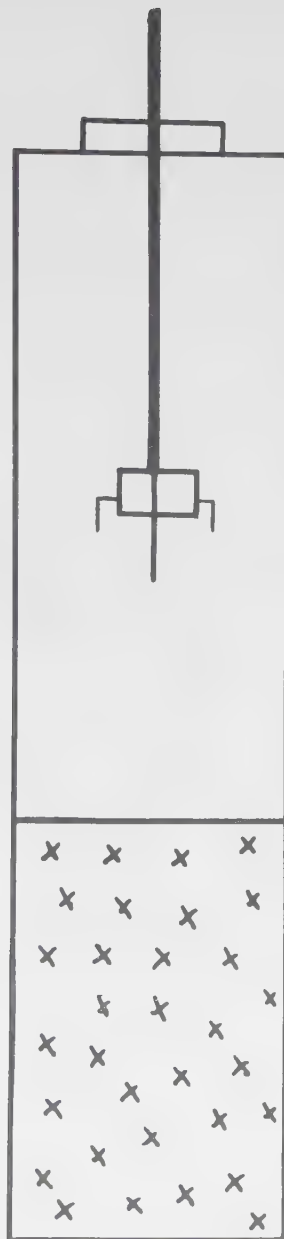


FIG: 9 DISPOSITIF POUR DEPLACER LA SONDE

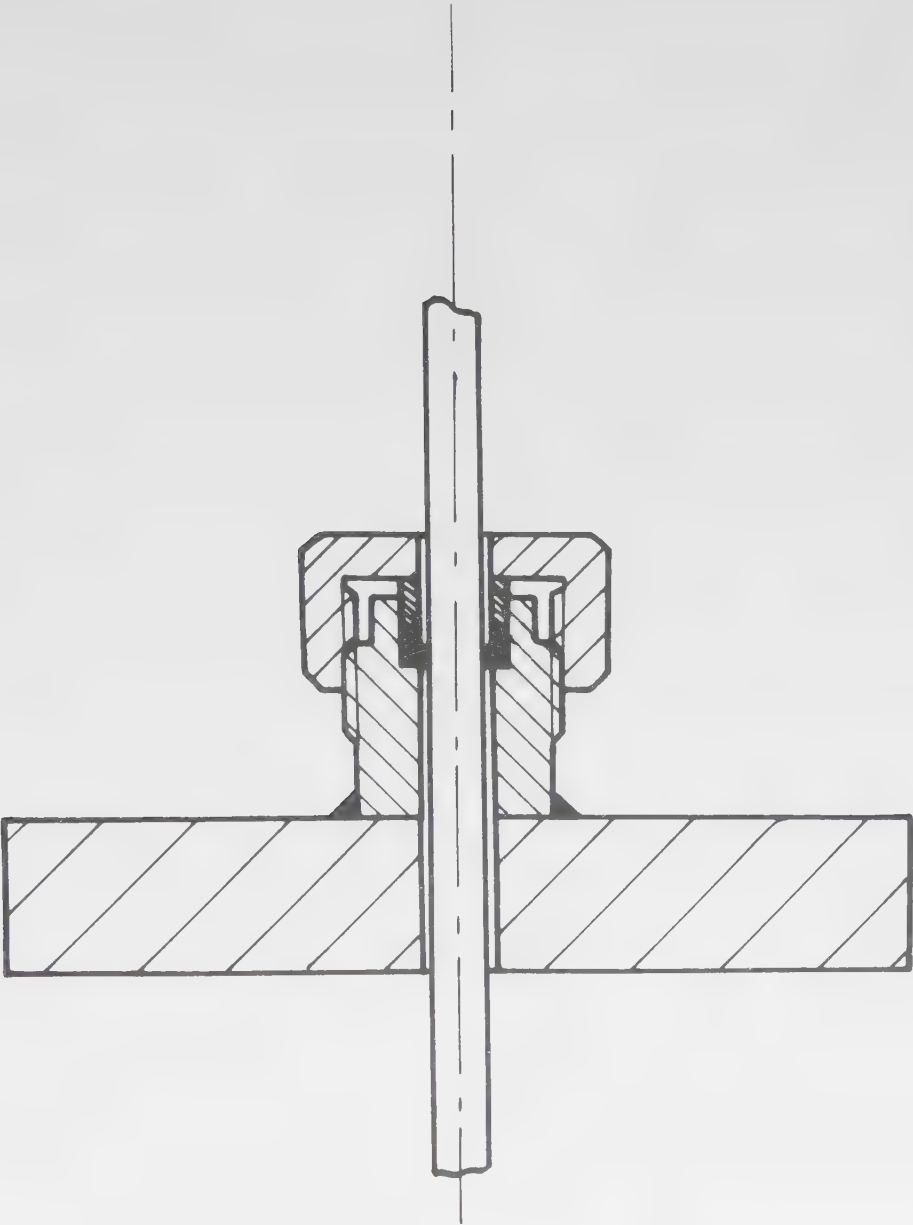


FIG: 10 SONDE

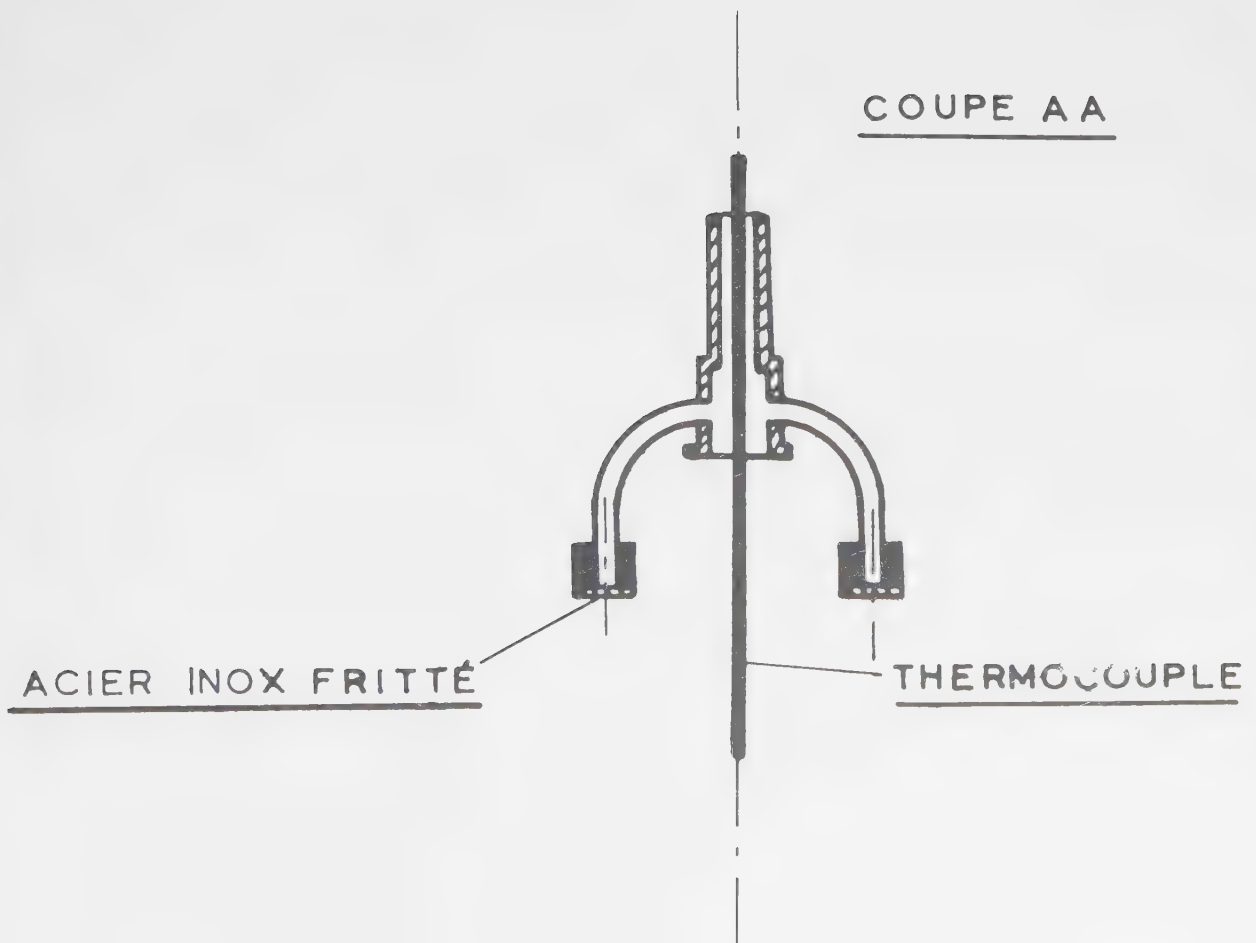
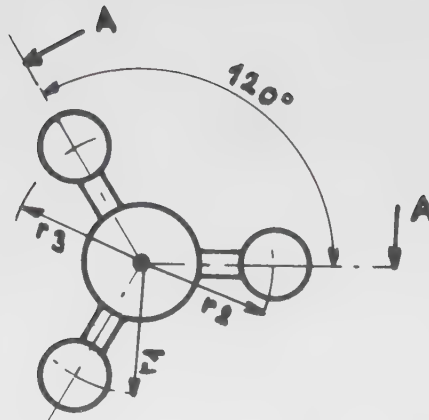
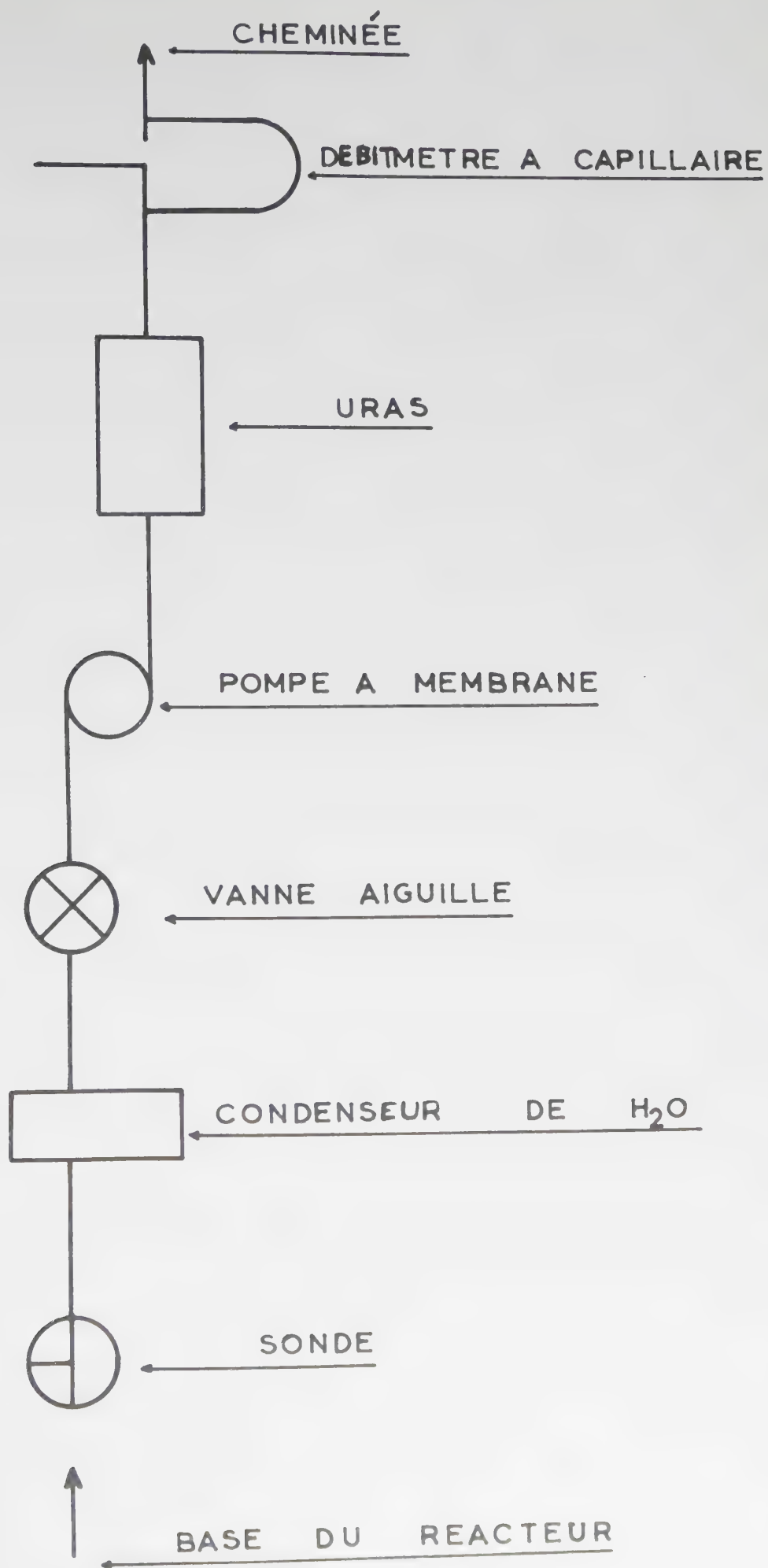


FIG:11

CIRCUIT DE PRELEVEMENT



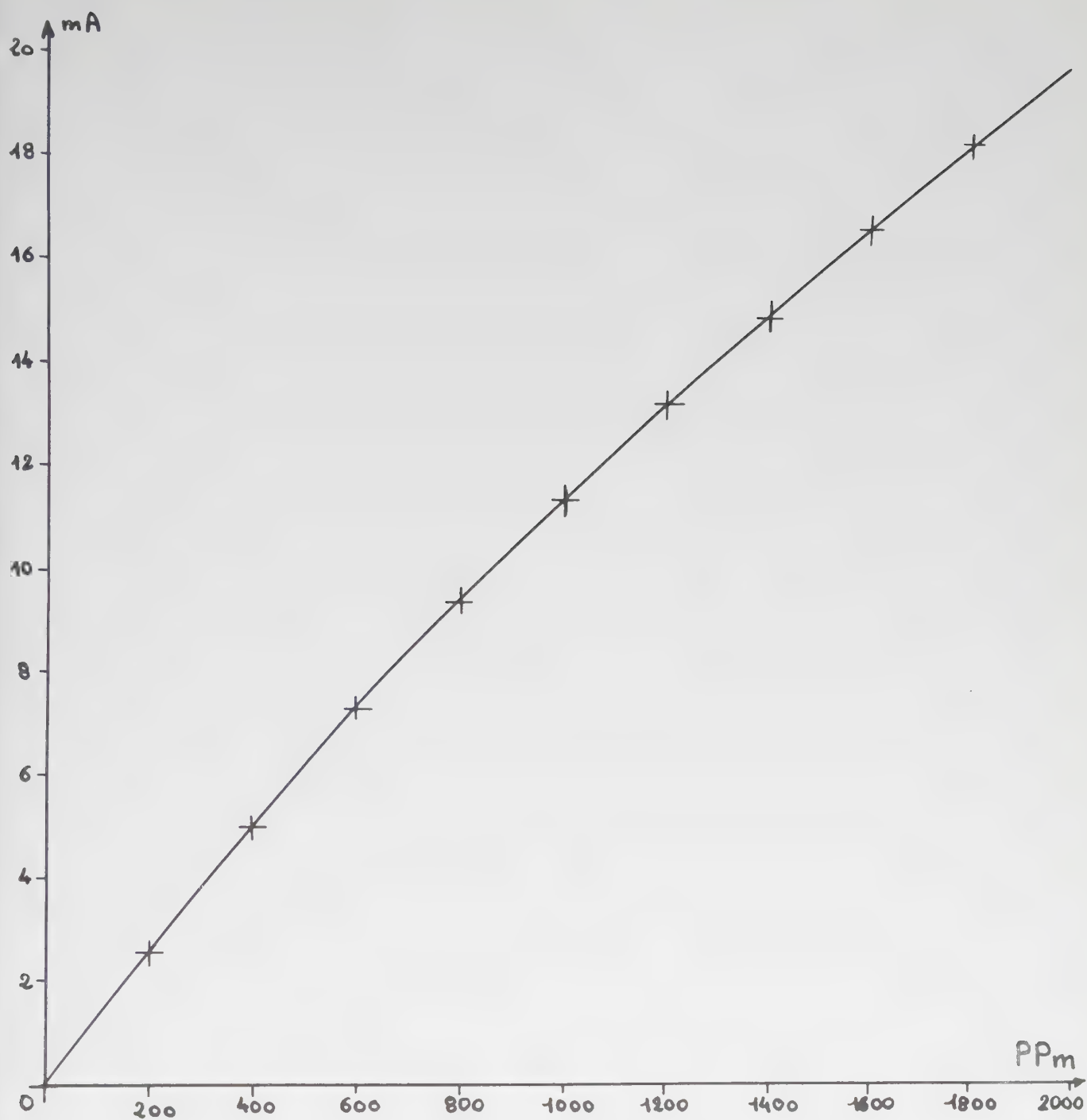


FIG:12 ETALONNAGE GRANDE ETENDUE

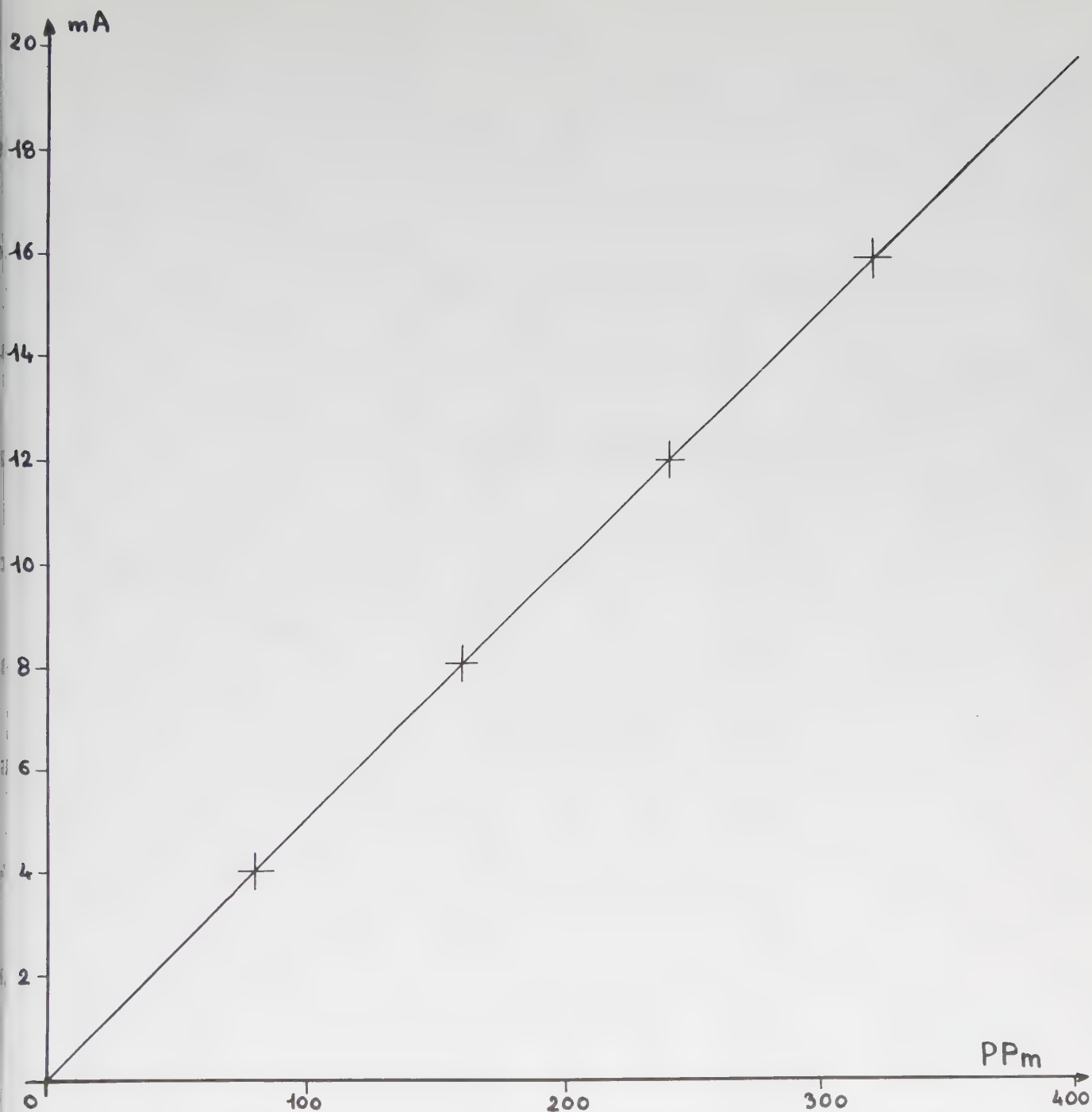


FIG: 13 ETALONNAGE PETITE ETENDUE

FIG: 14 REGENERATEUR

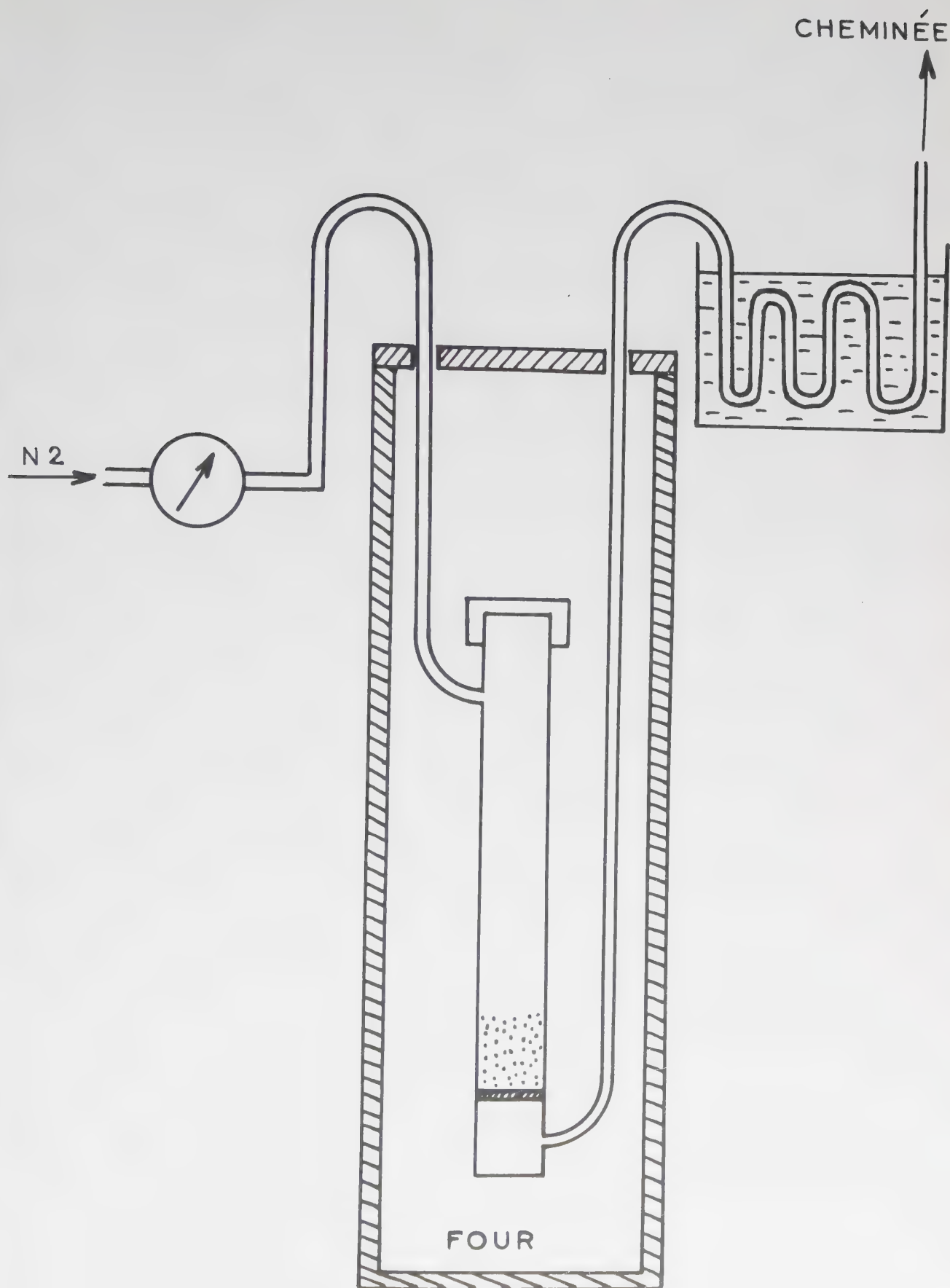
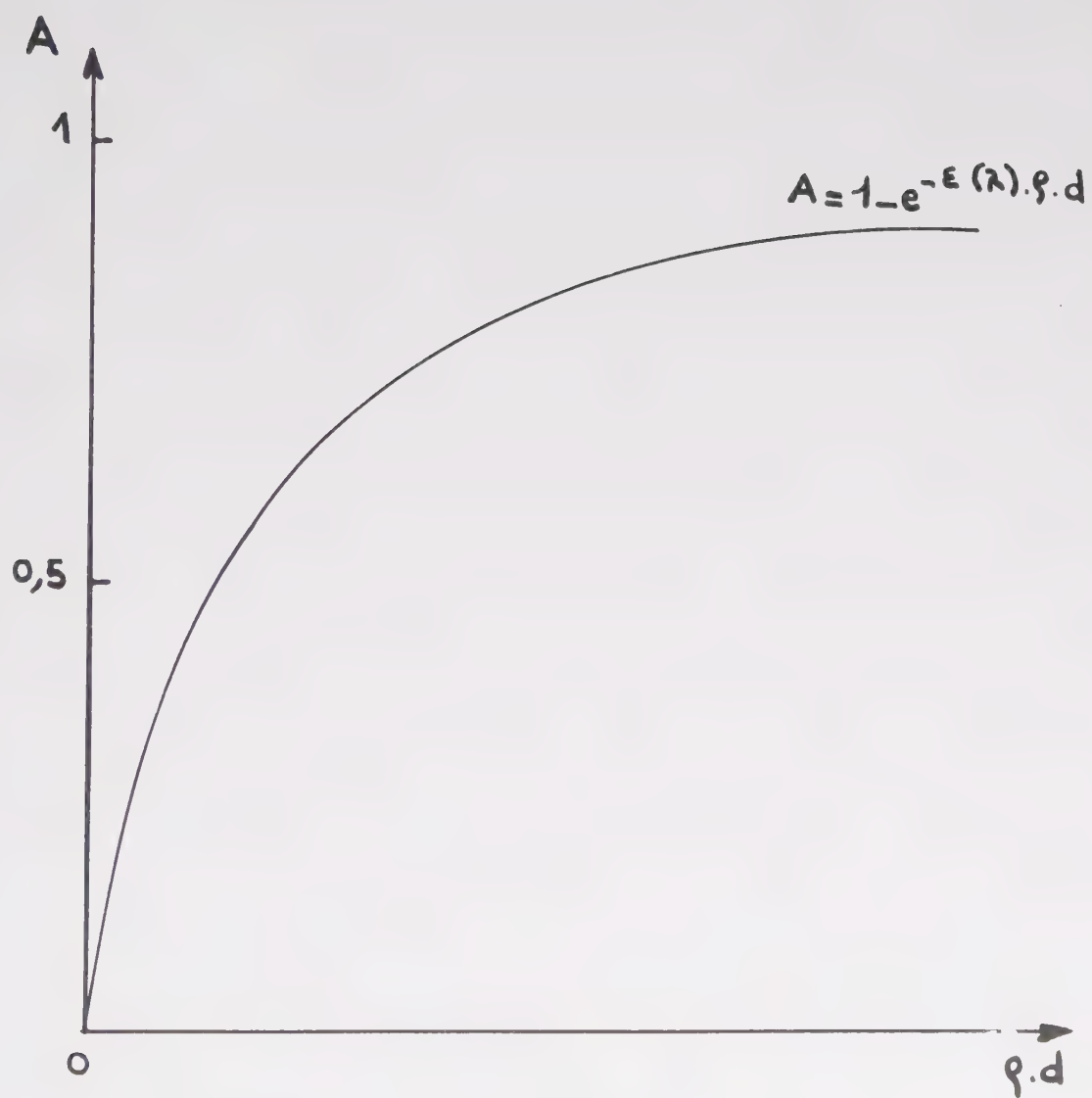


FIG: 15



CHAPITRE IV

FIG: 1

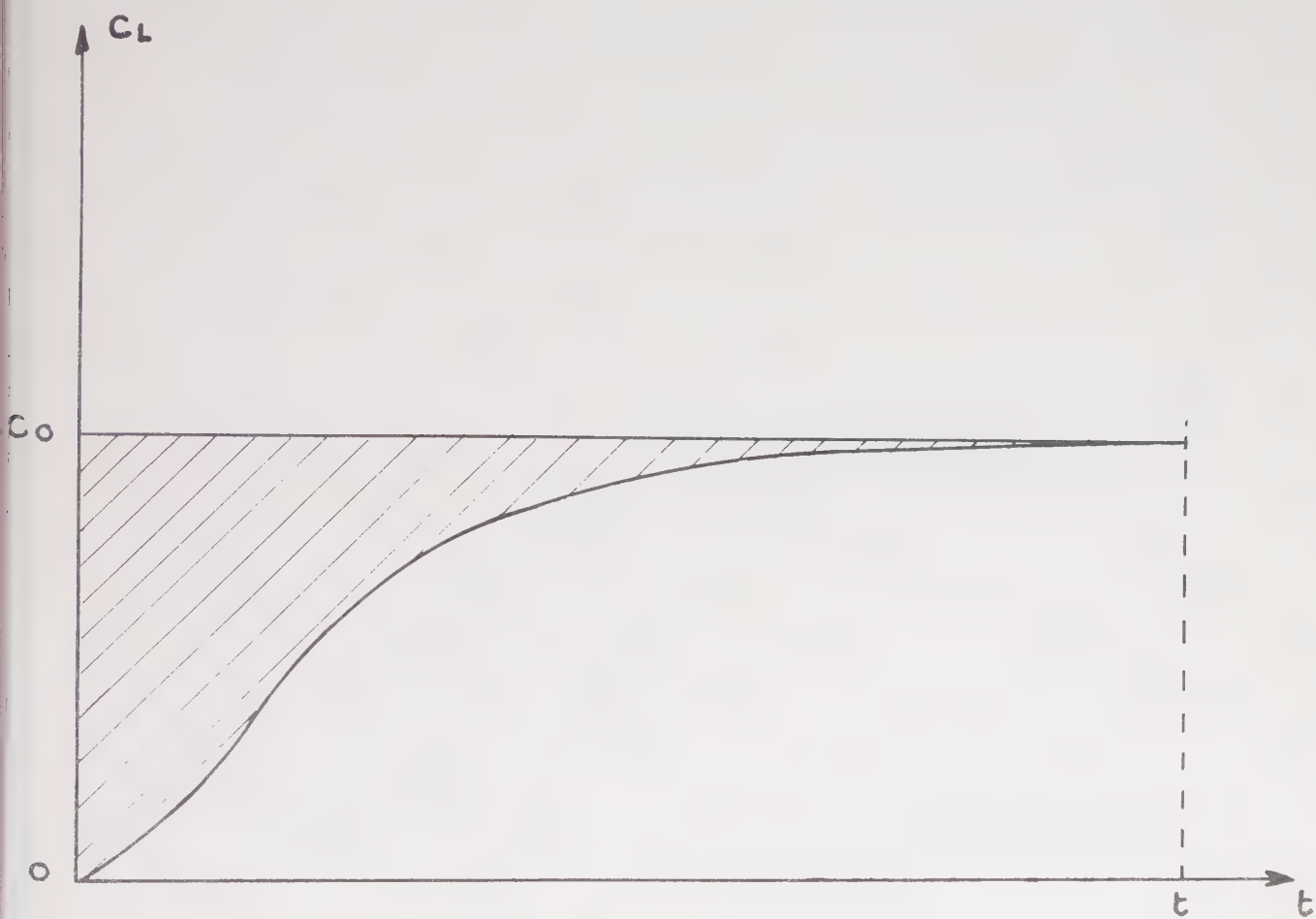


FIG: 2

I REACTEUR VIDE

II REACTEUR CHARGÉ

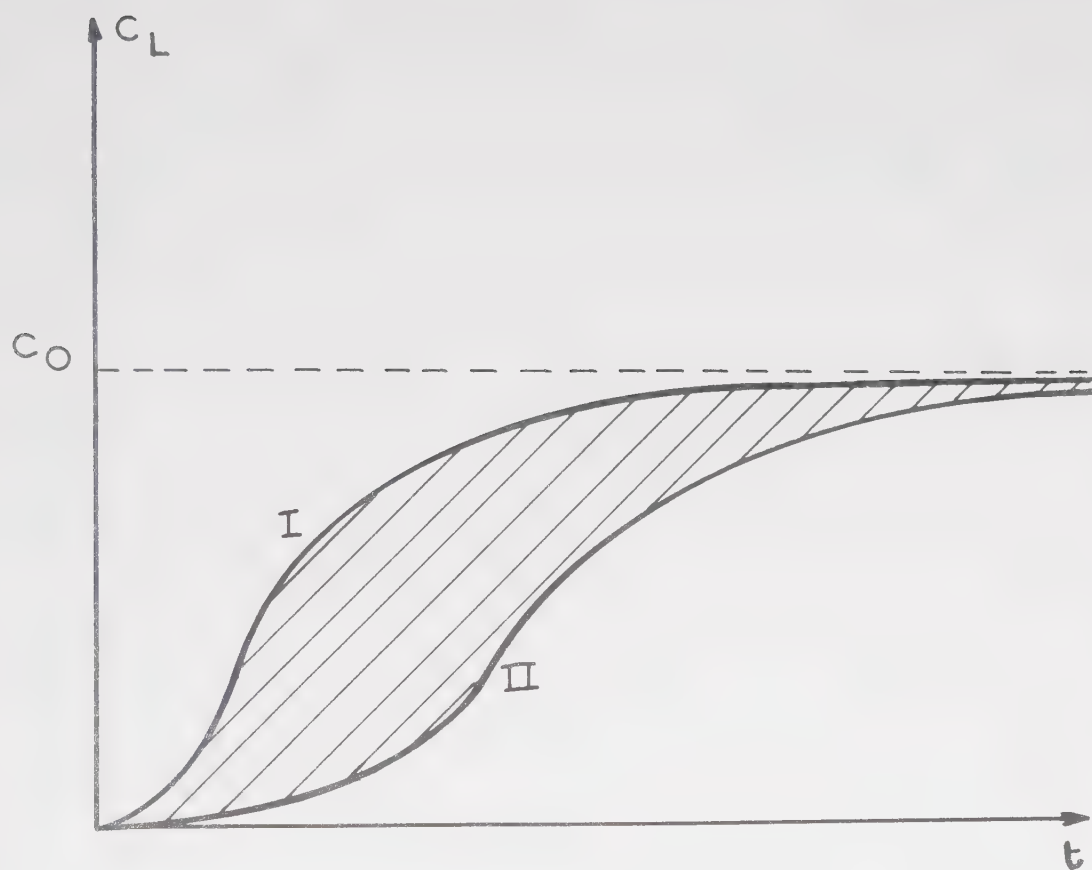


FIG 3
REPONSES INDICIELLES SANS

CHARGE D'ADSORBANT

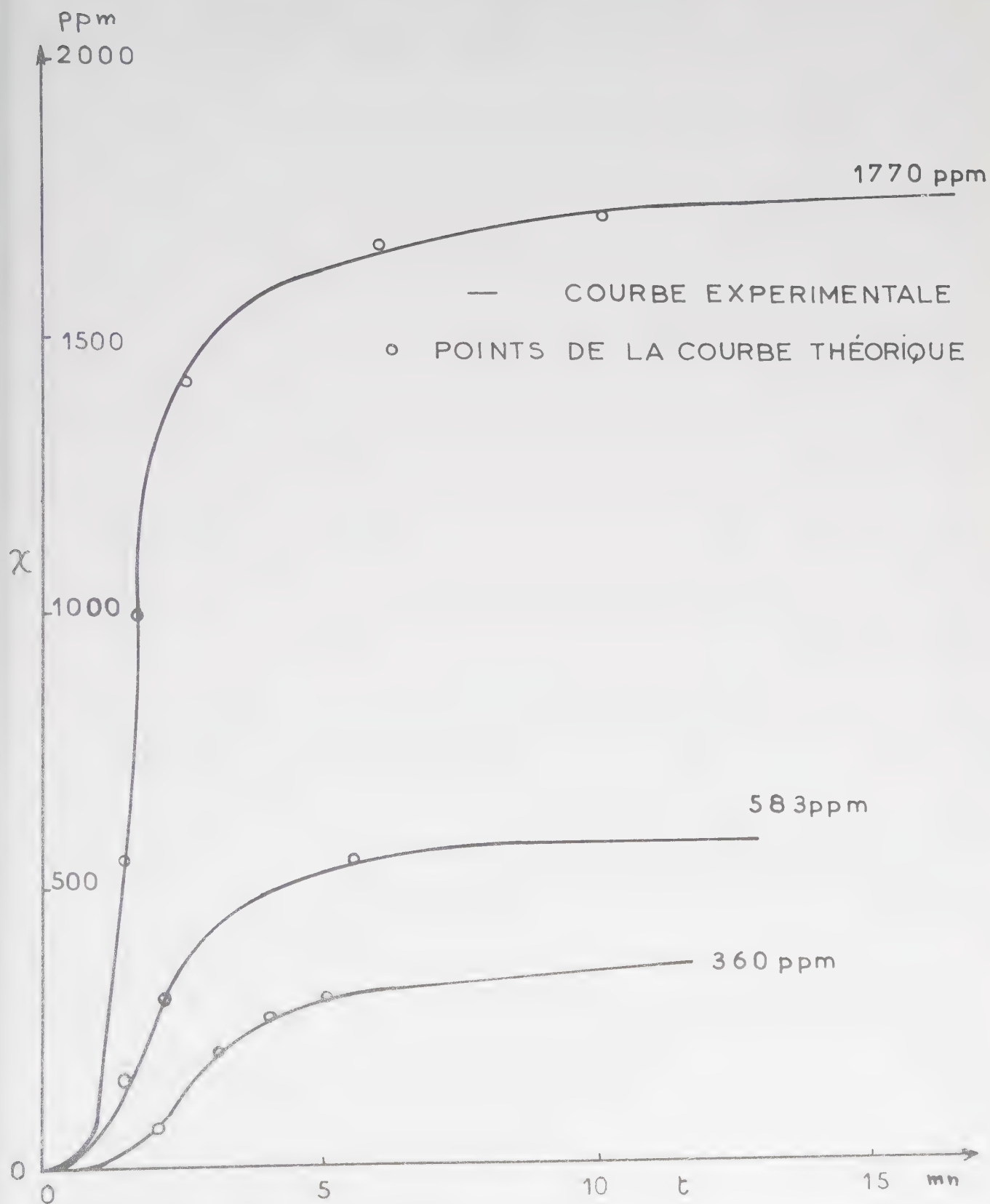


FIG : 4

MODELE SIMPLIFIE DU
CIRCUIT DE MESURE

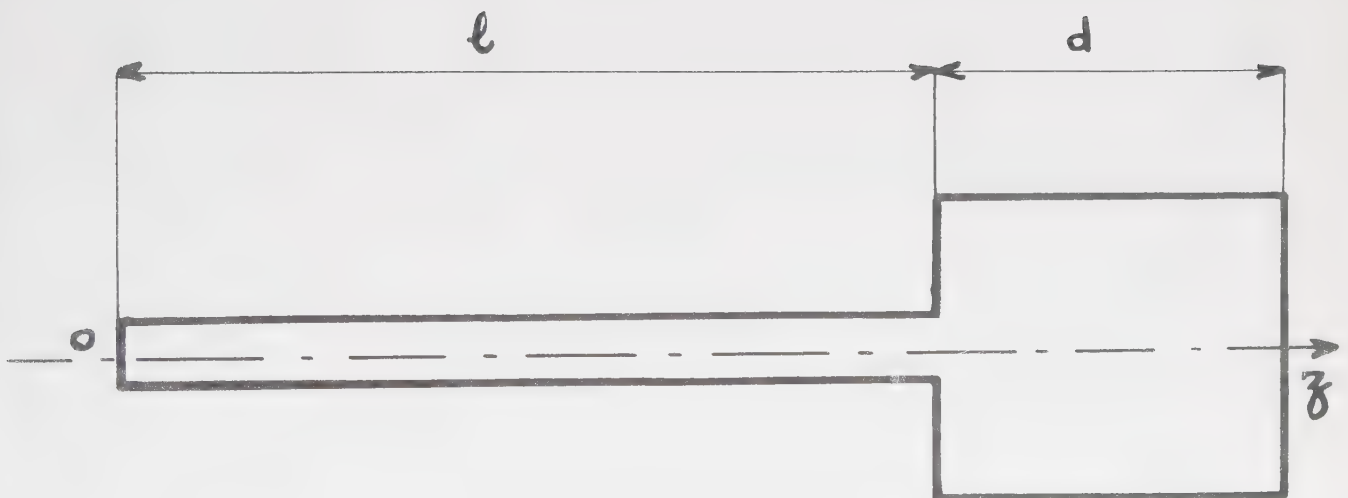


FIG.5 Réponse Indicielle Théorique

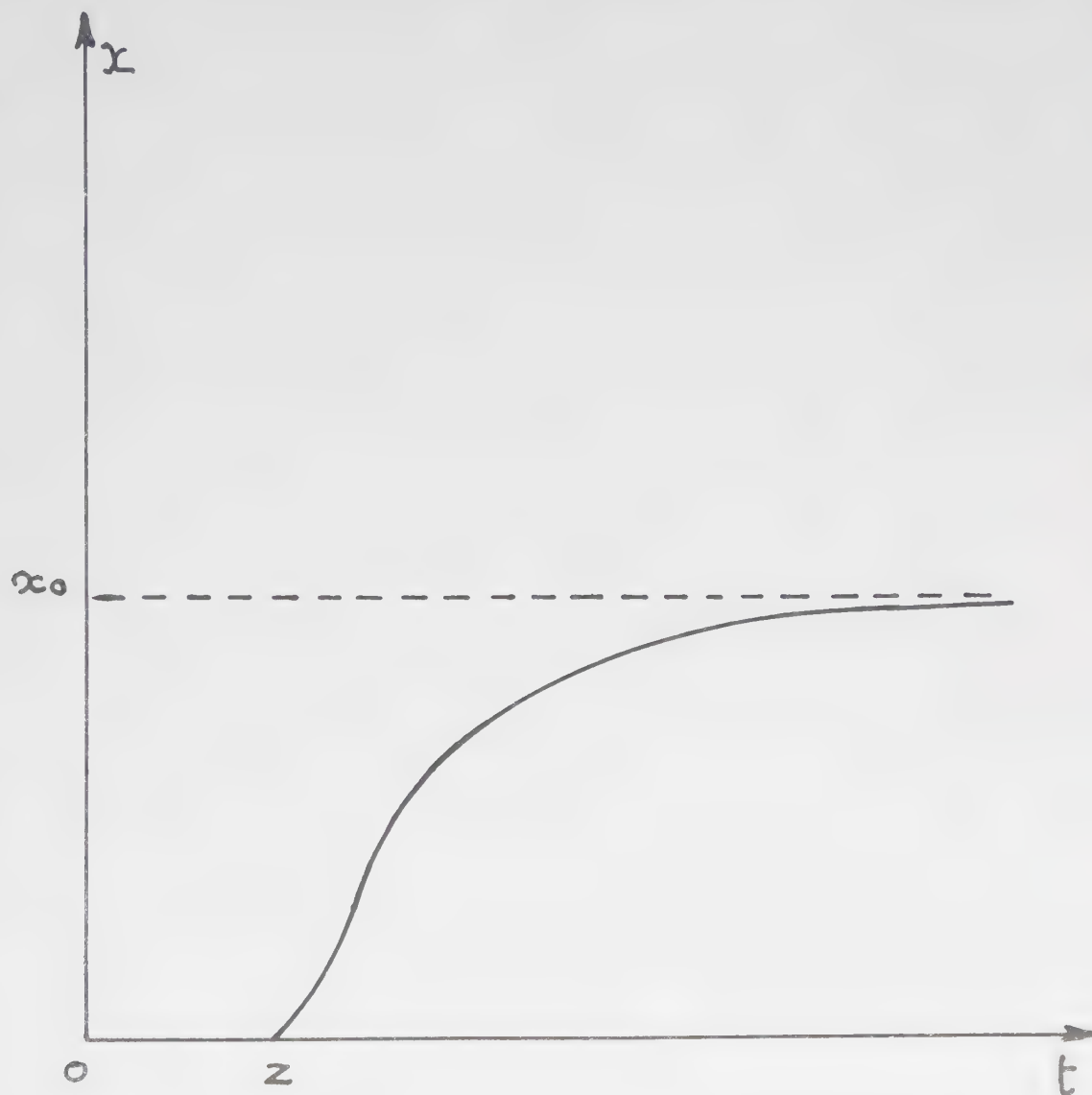


FIG : 6

ACTICARBONE NC 40

REPONSES A UN ECHELON DE CONCENTRATION

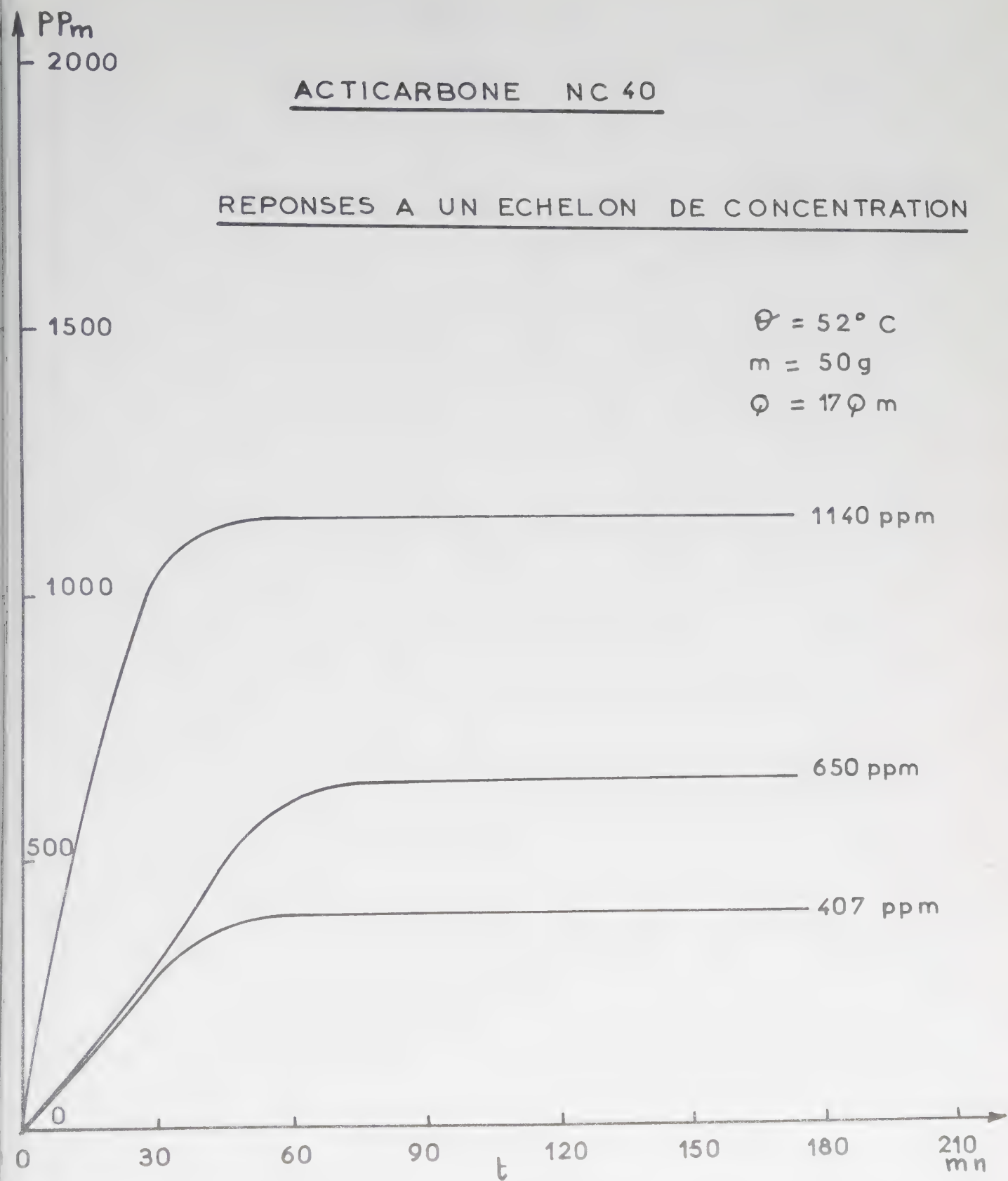


FIG: 7

ACTICARBONE NC 40

REPONSE A UN ECHELON DE CONCENTRATION

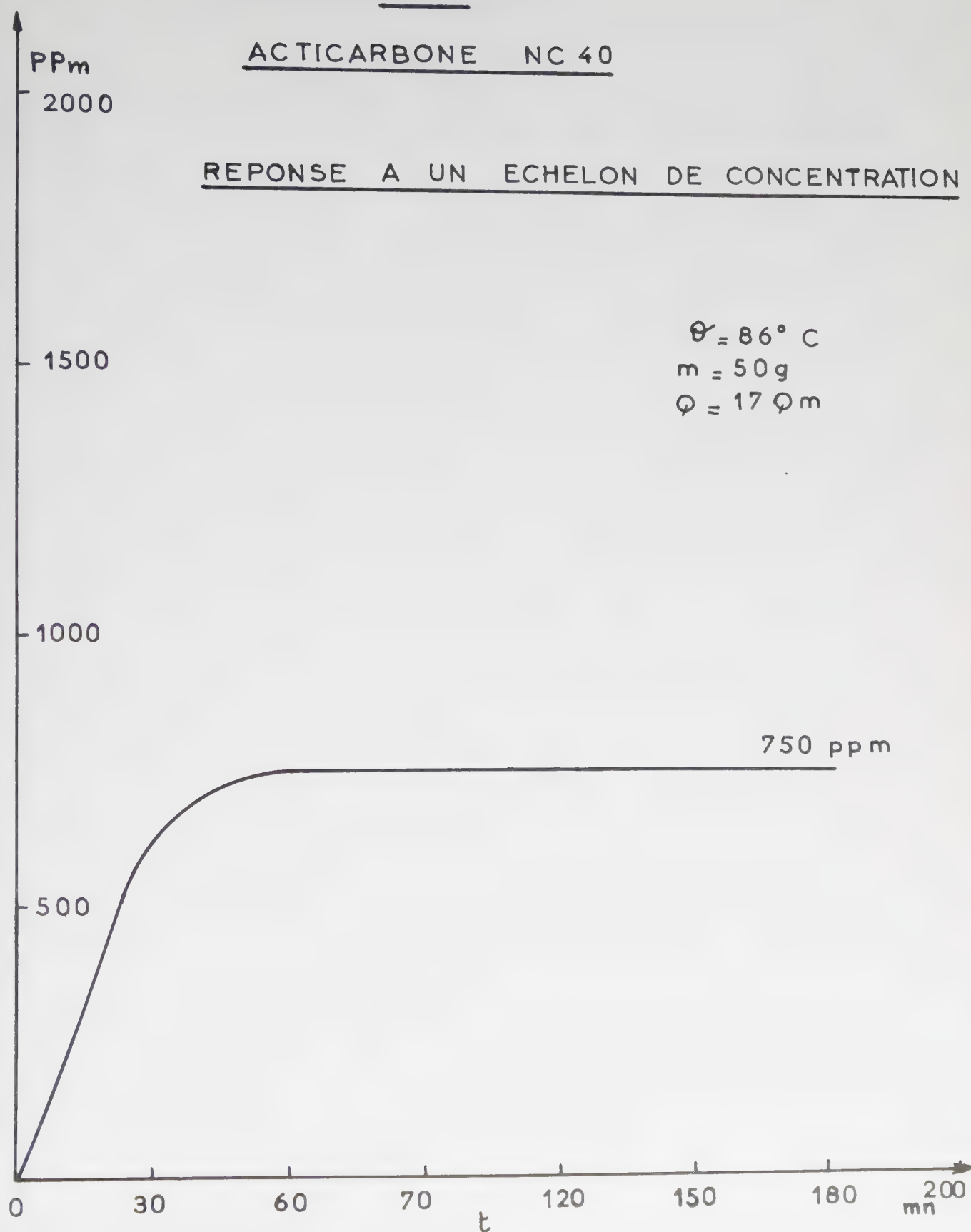


FIG: 8
ACTICARBONE NC 40

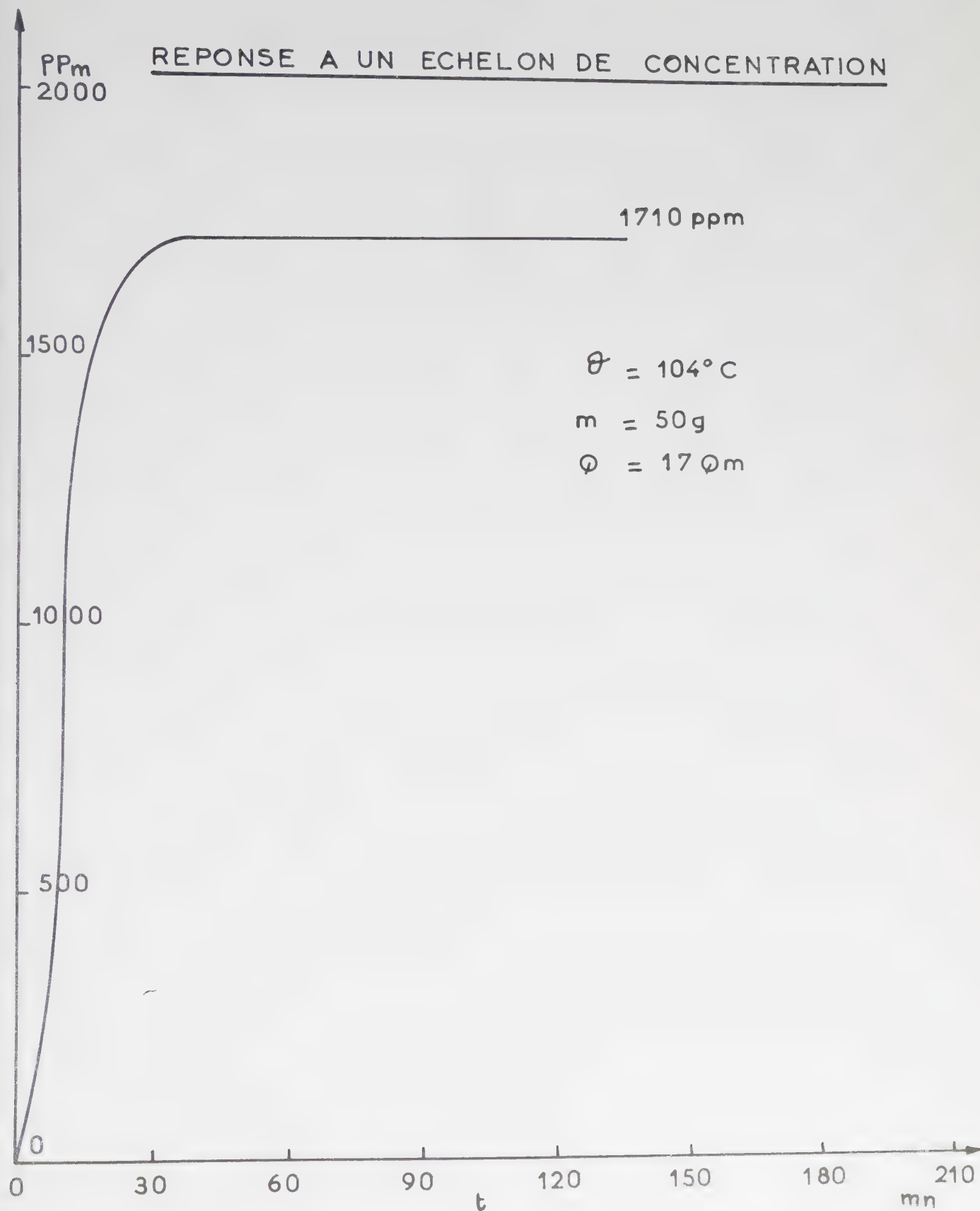


FIG: 9

ACTICARBONE NC 40

ISOTHERME D'ADSORPTION

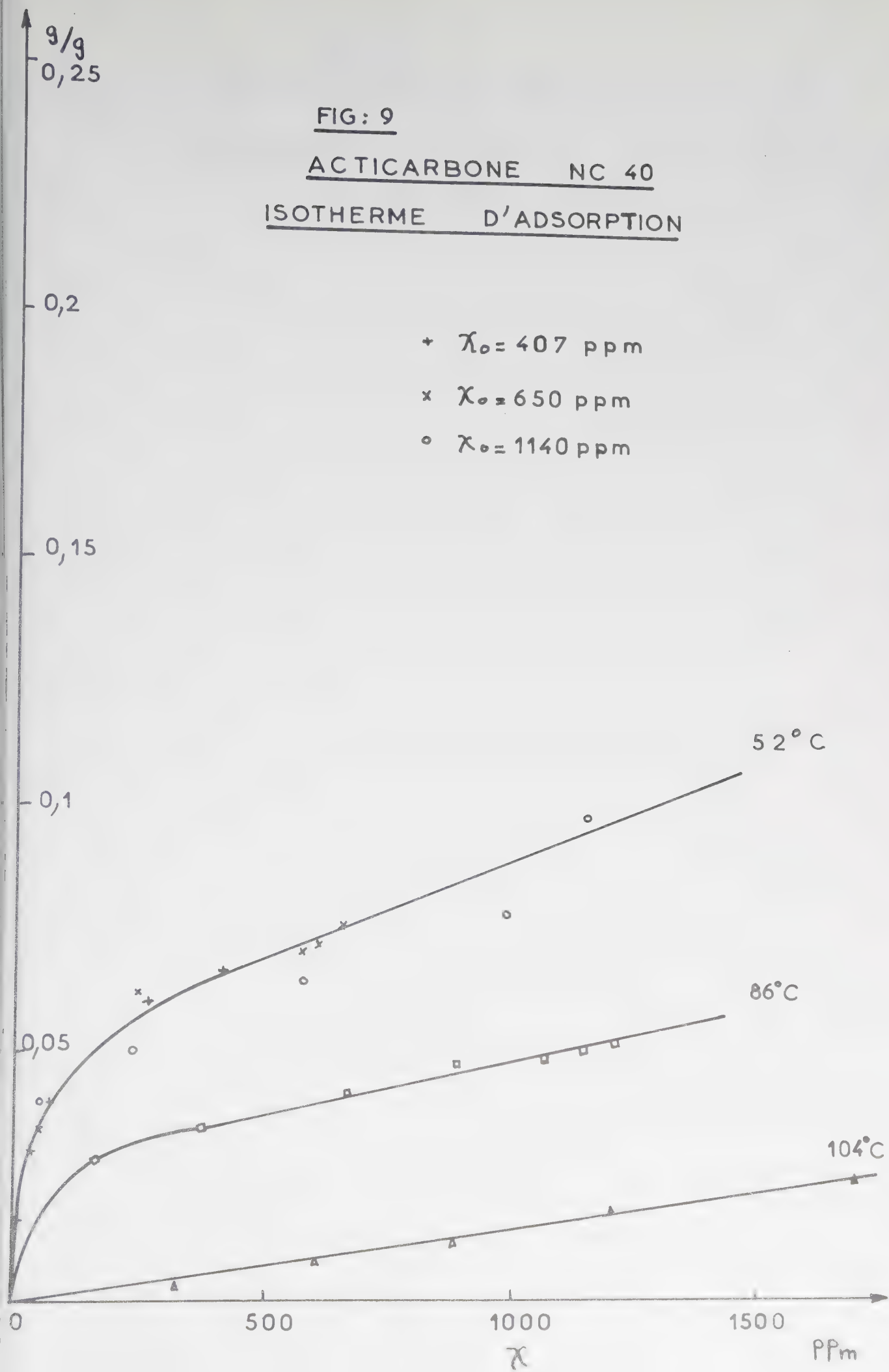


FIG 10

CATALYSEUR DE CRACKING LA-C3

REPONSES A UN ECHELON DE CONCENTRATION

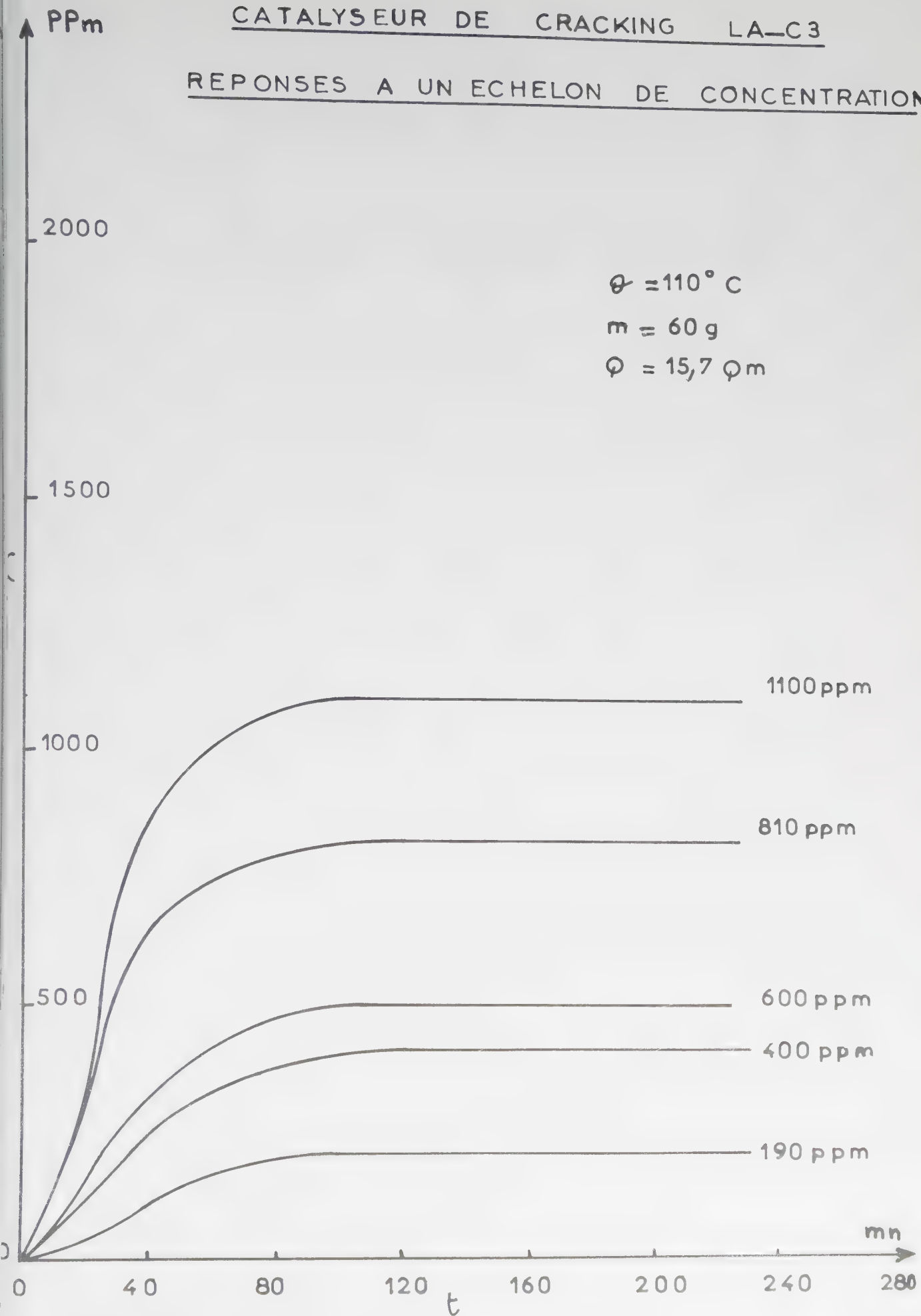


FIG: 11

CATALYSEUR DE CRACKING LA _C 3

ISOTHERME D'ADSORPTION 110°C

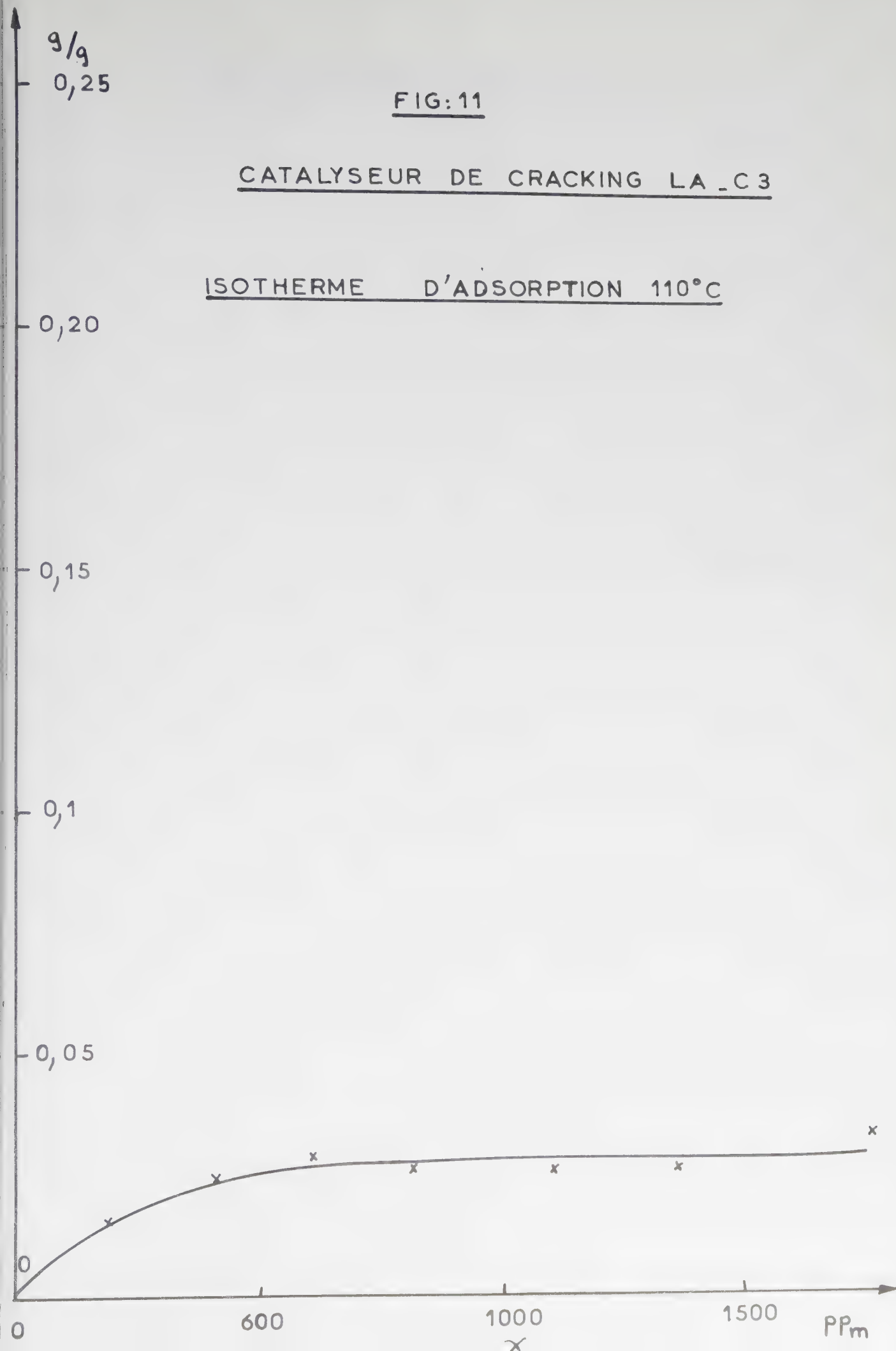
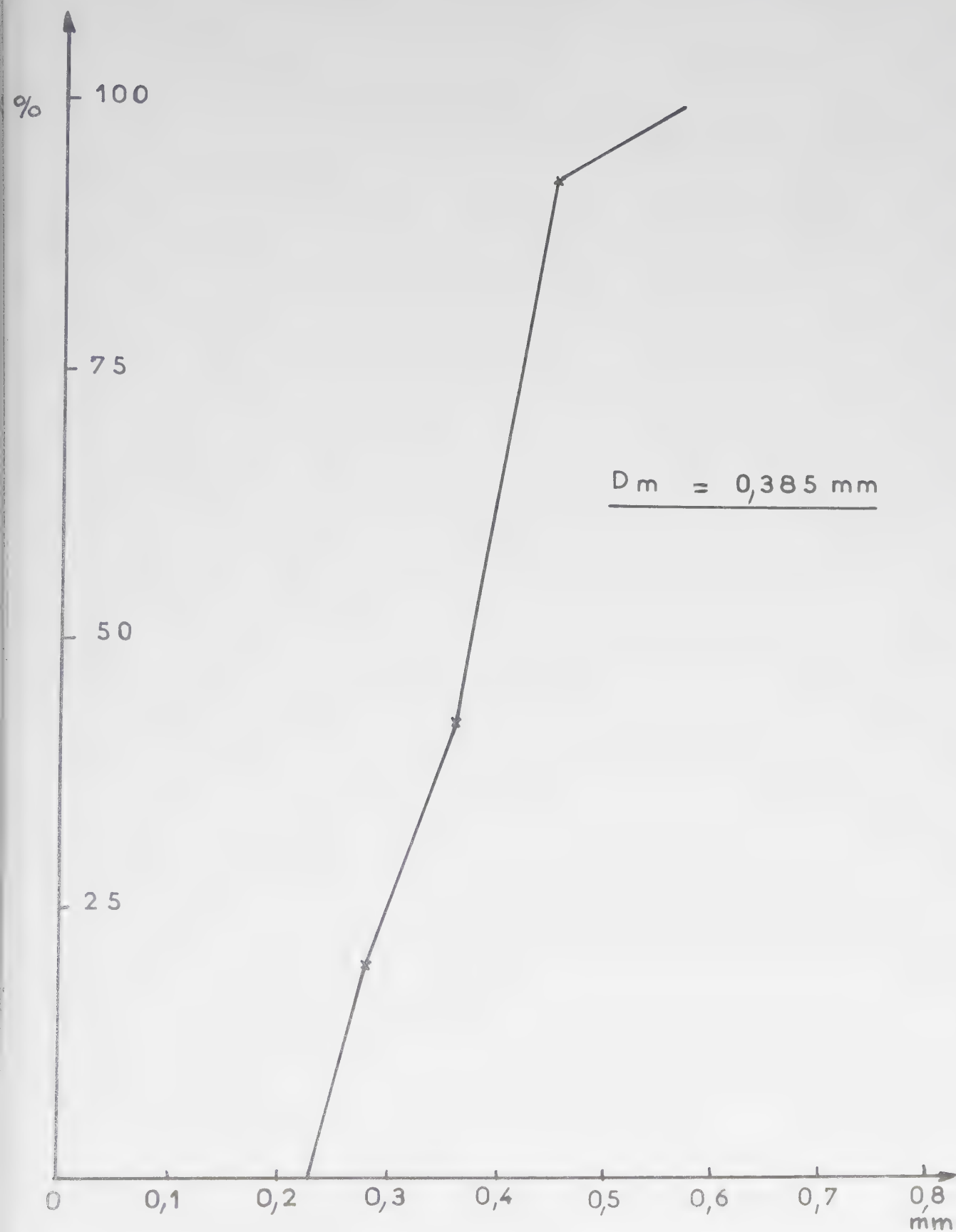
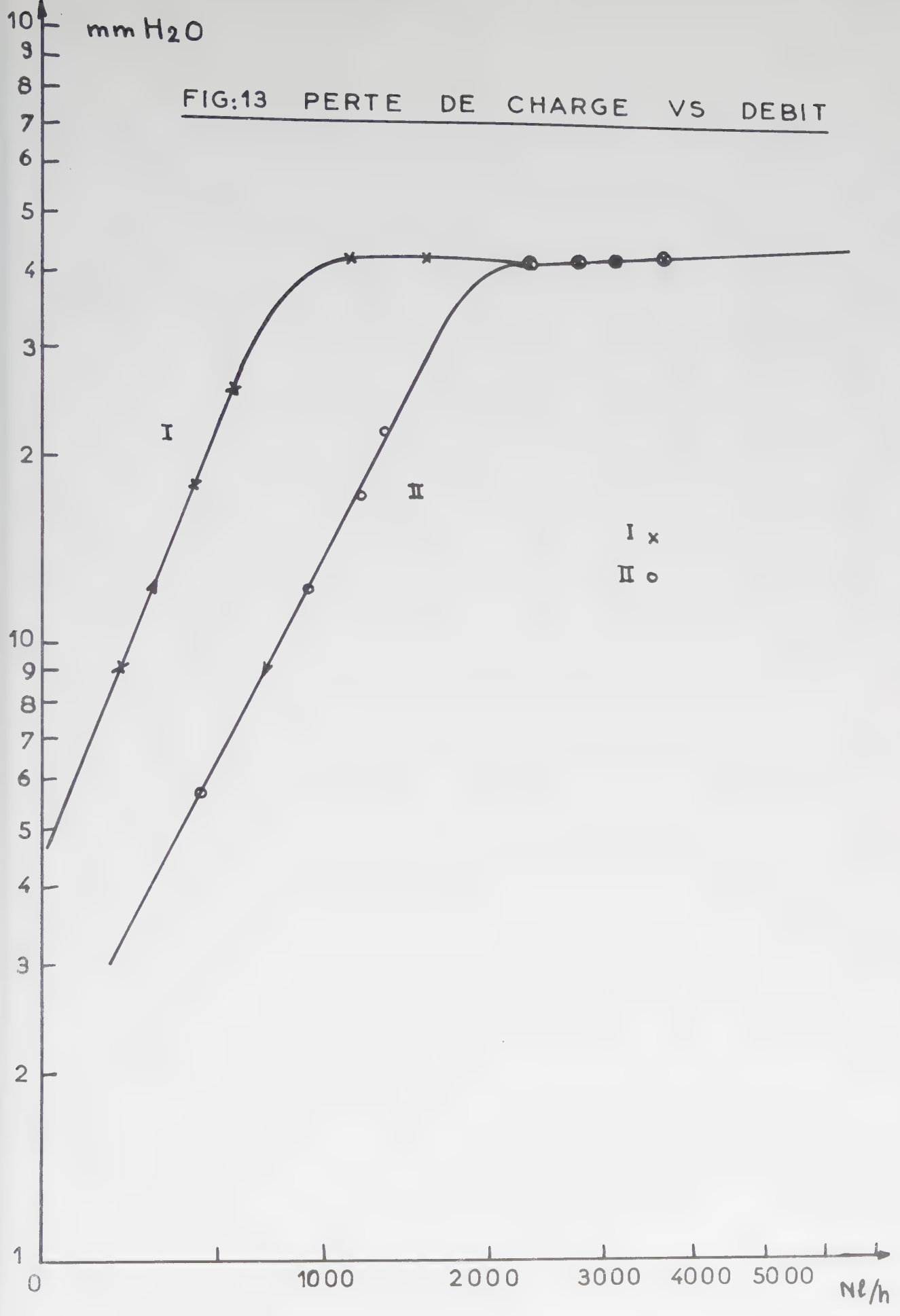


FIG 12 : GRANULOMETRIE



mm H₂O

FIG:13 PERTE DE CHARGE VS DEBIT



$\theta = 60^{\circ} \text{C}$
 $m = 80 \text{ g}$
 $Q = 3,5 Q_m$

FIG. 14
 ALUMINE ACTIVÉE VIERGE
 REPONSE A UN ECHELON DE CONCENTRATION

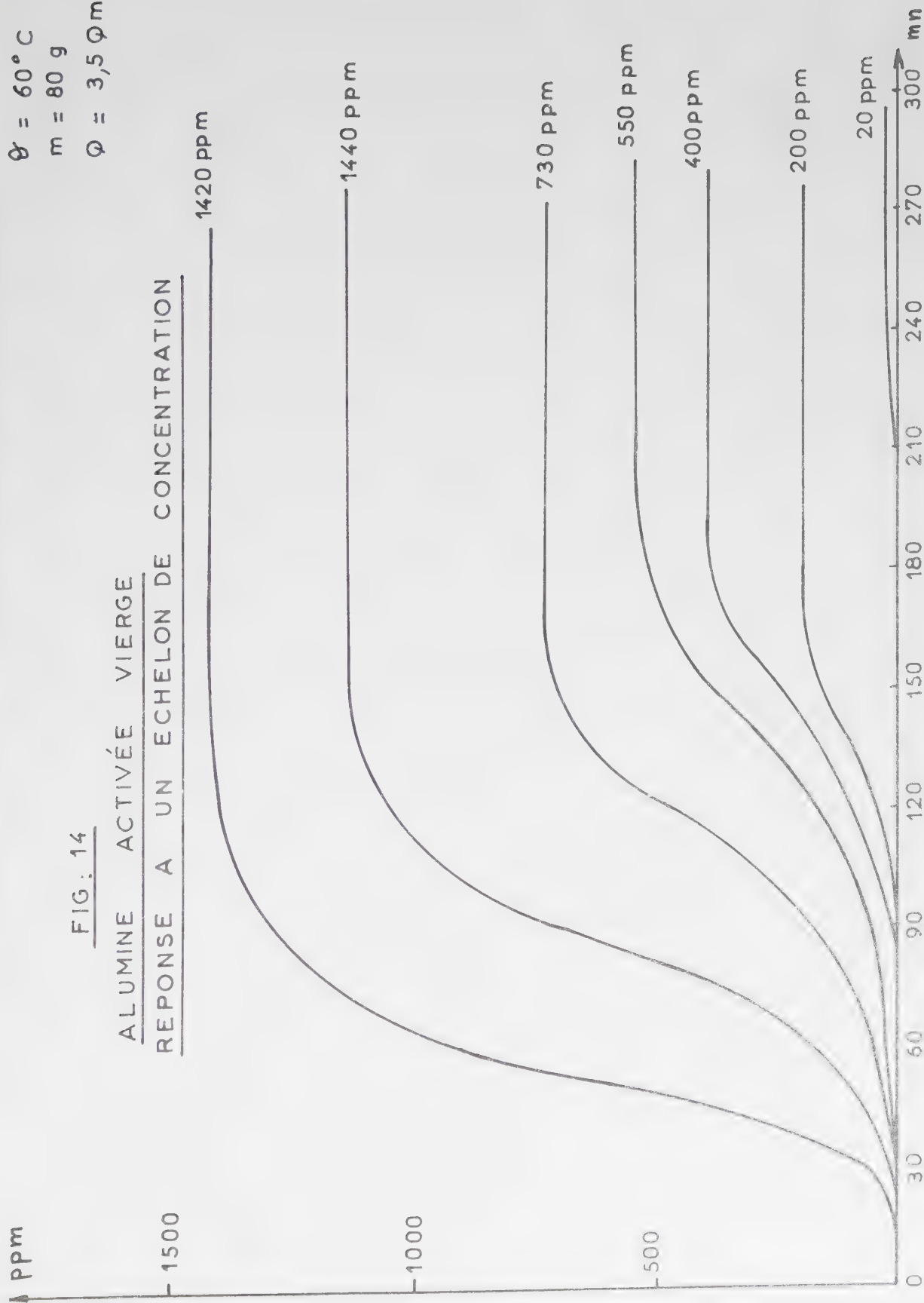


Fig.15 Alumine activée vierge Réponses à un échelon de concentration

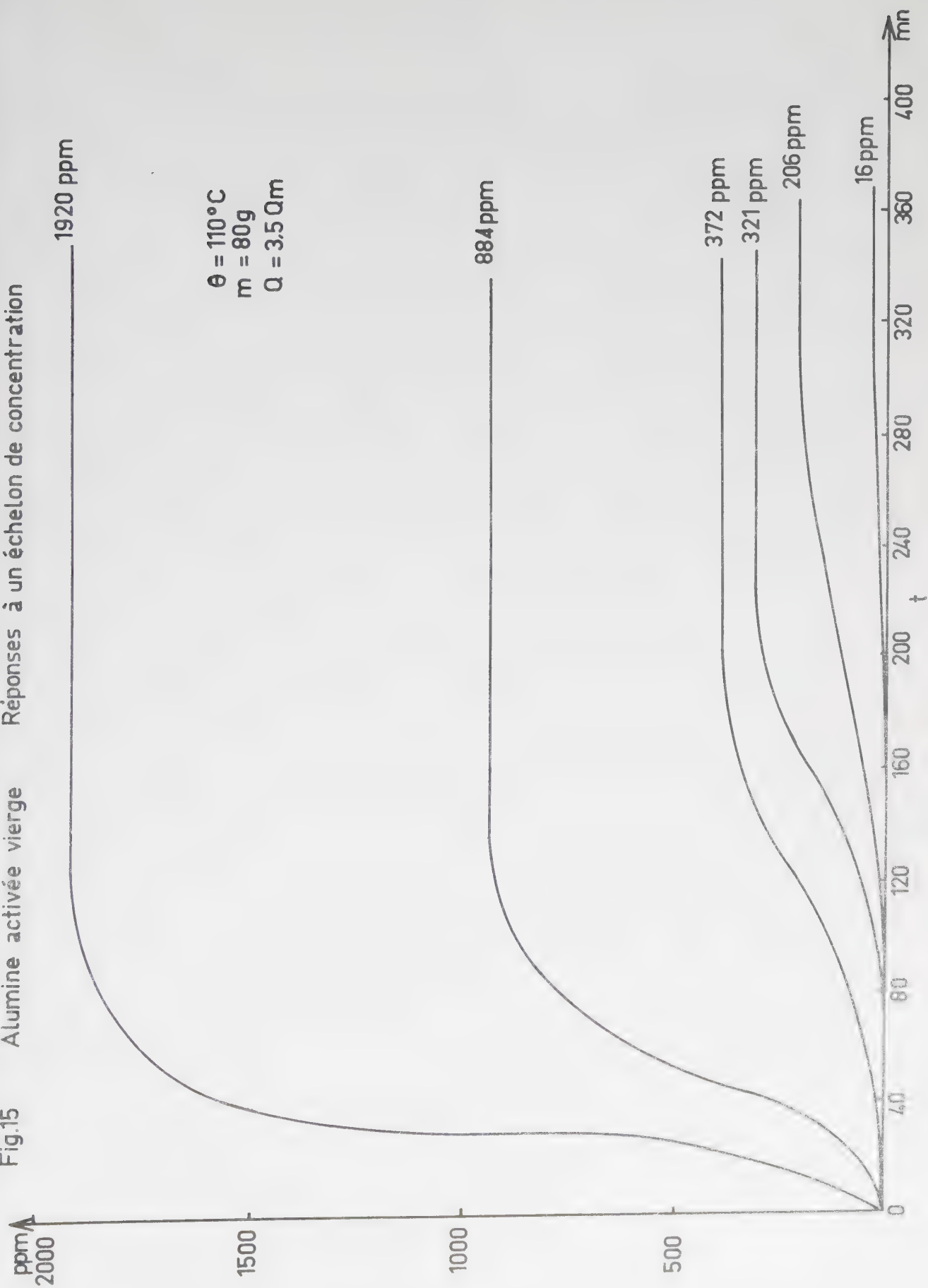


FIG:16

ALUMINE ACTIVEE VIERGE
ISOTHERME D'ADSORPTION

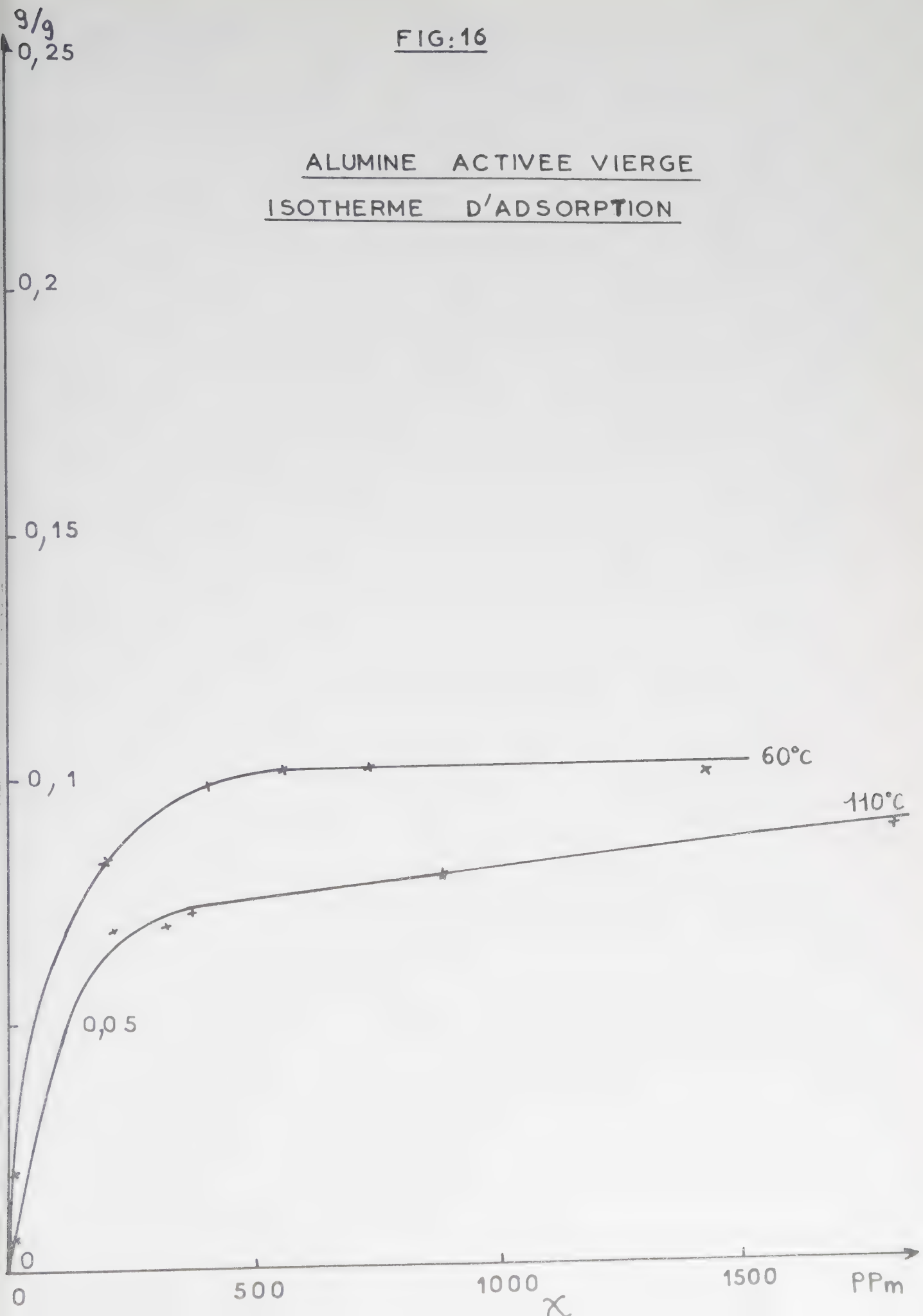


FIG: 17

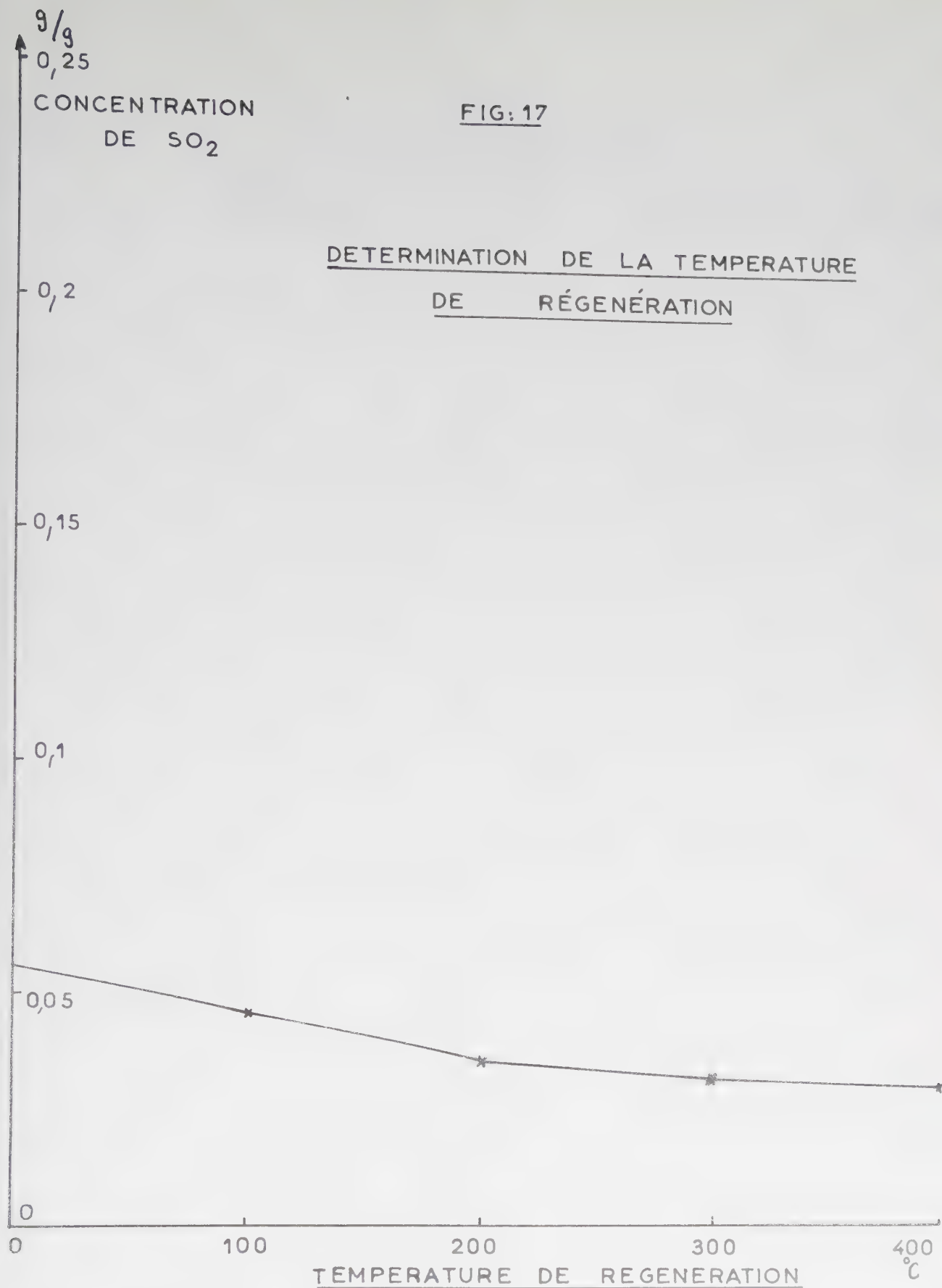
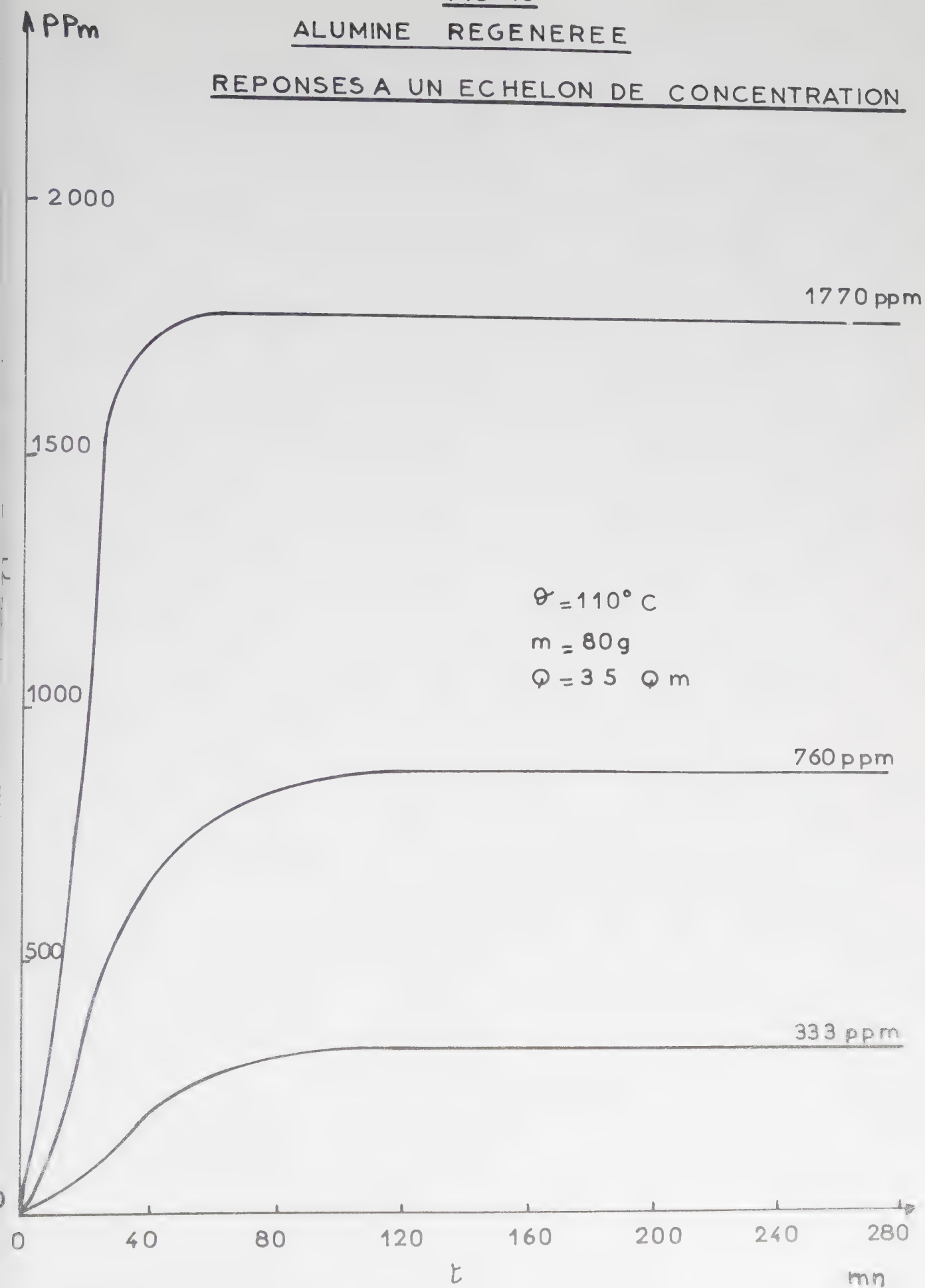


FIG 18

ALUMINE REGENERE

REPONSES A UN ECHELON DE CONCENTRATION

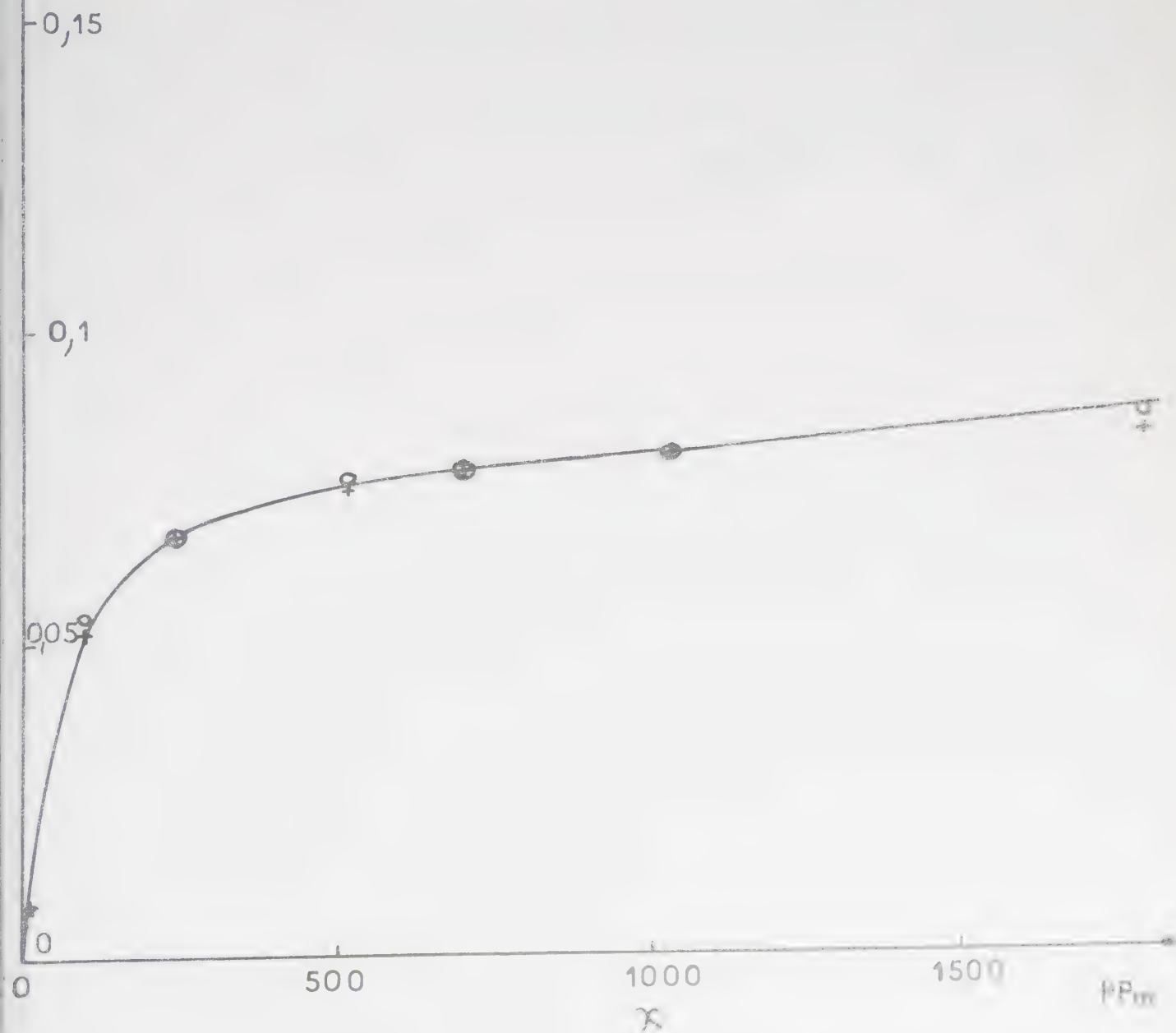


g/g
0,25

FIG: 20

ALUMINE ACTIVÉE VIERGE
INFLUENCE DE L'HUMIDITÉ

- ISOTHERME 110°C EFFLUENT SEC
+ INJECTION SIMULTANEE $H_2O + SO_2$
o SATURATION PAR H_2O PUIS INJECTION DE SO_2



g/g
0,25

FIG 21

ALUMINE ACTIVÉE RÉGÉNÉRÉE
INFLUENCE DE L'HUMIDITÉ

0,2

0,15

- ISOTHERME 110° EFFLUENT SEC
- + INJECTION SIMULTANÉE H_2O, SO_2
- O SATURATION PAR H_2O PUIS
INJECTION DE SO_2

0,1

0,05

0

500

1000

1500

PP_m

χ

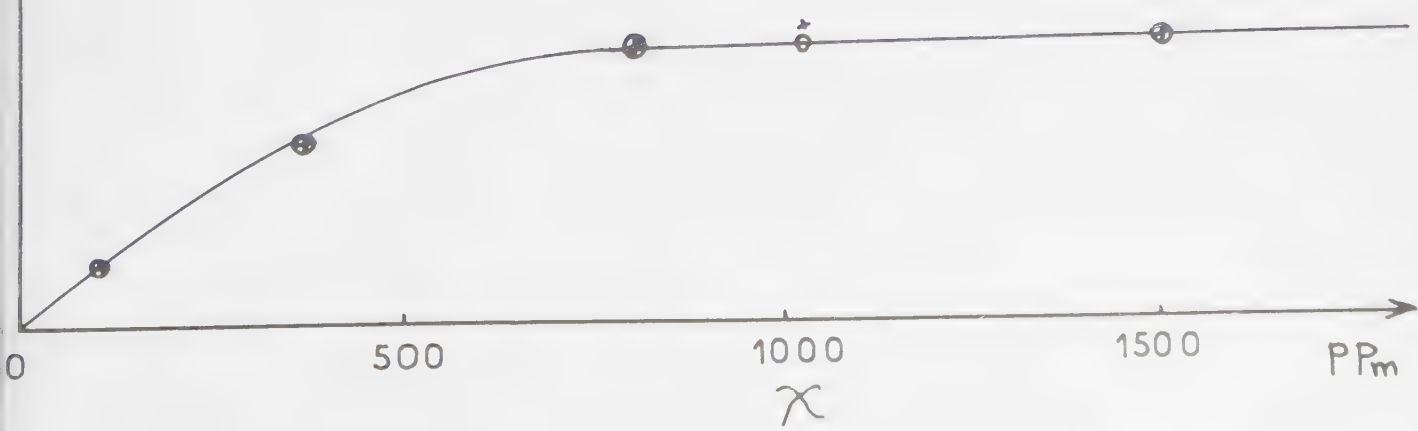
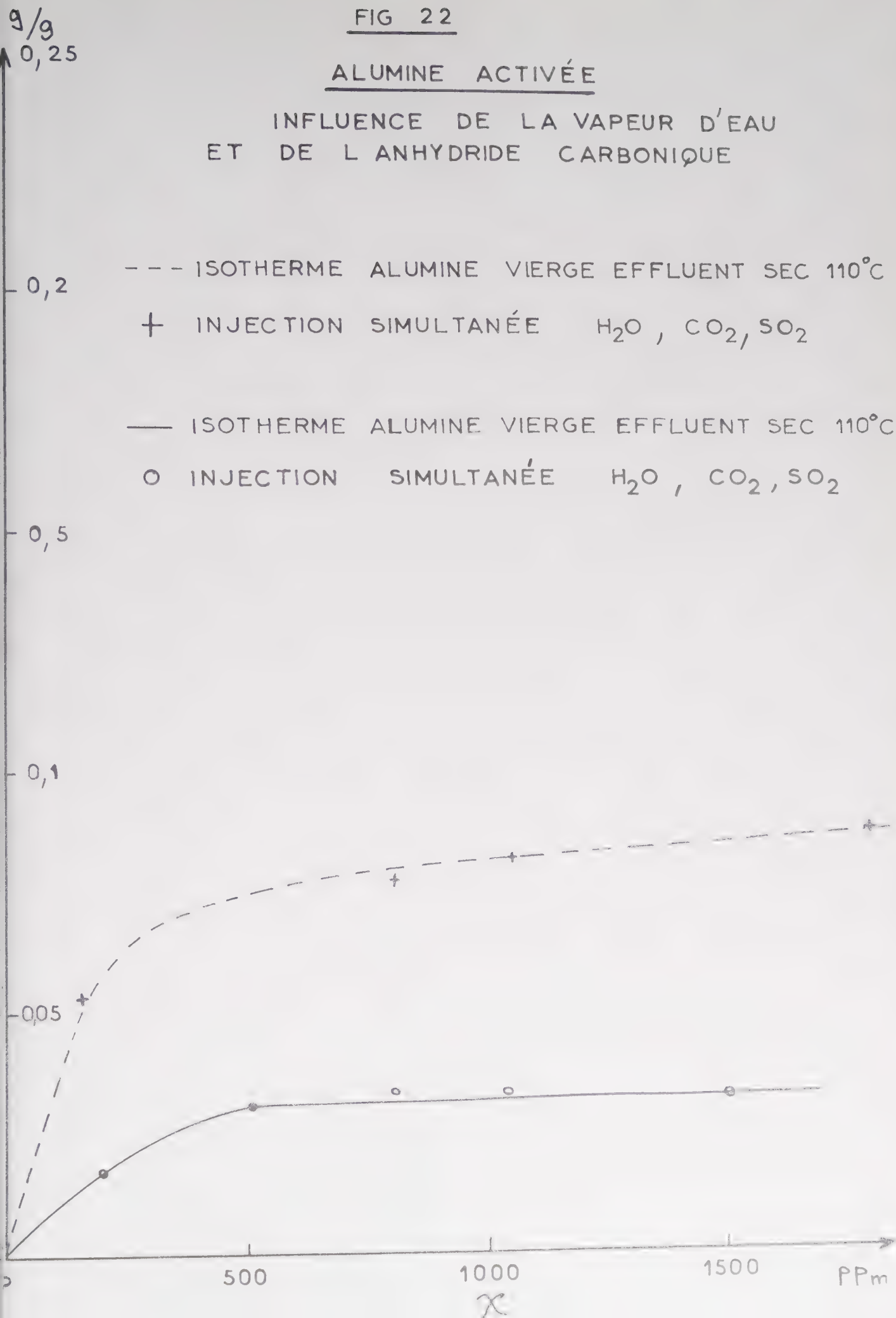


FIG 22

ALUMINE ACTIVÉE

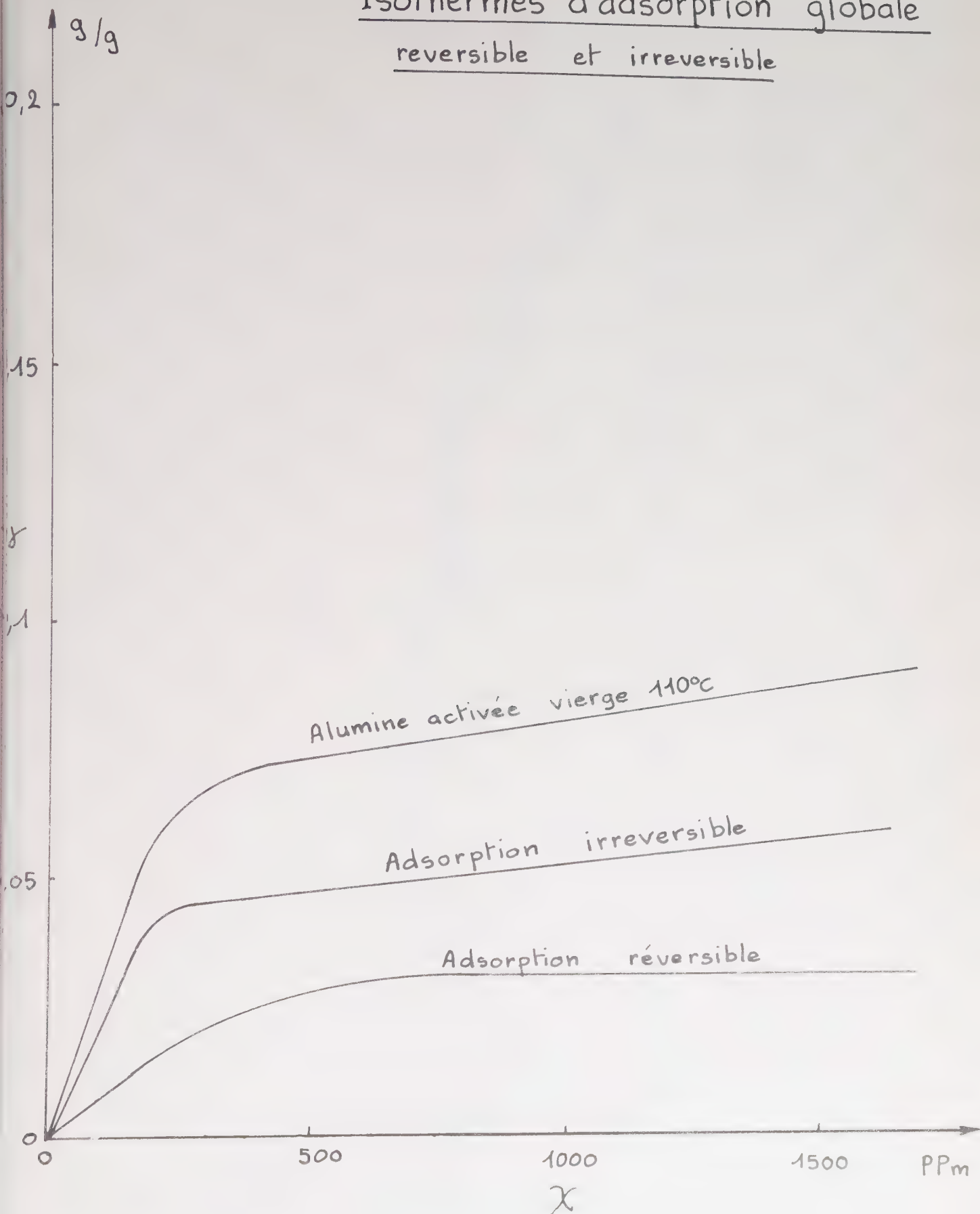
INFLUENCE DE LA VAPEUR D'EAU
ET DE L'ANHYDRIDE CARBONIQUE



CHAPITRE V

Fig: 1

Isothermes d'adsorption globale
reversible et irreversible



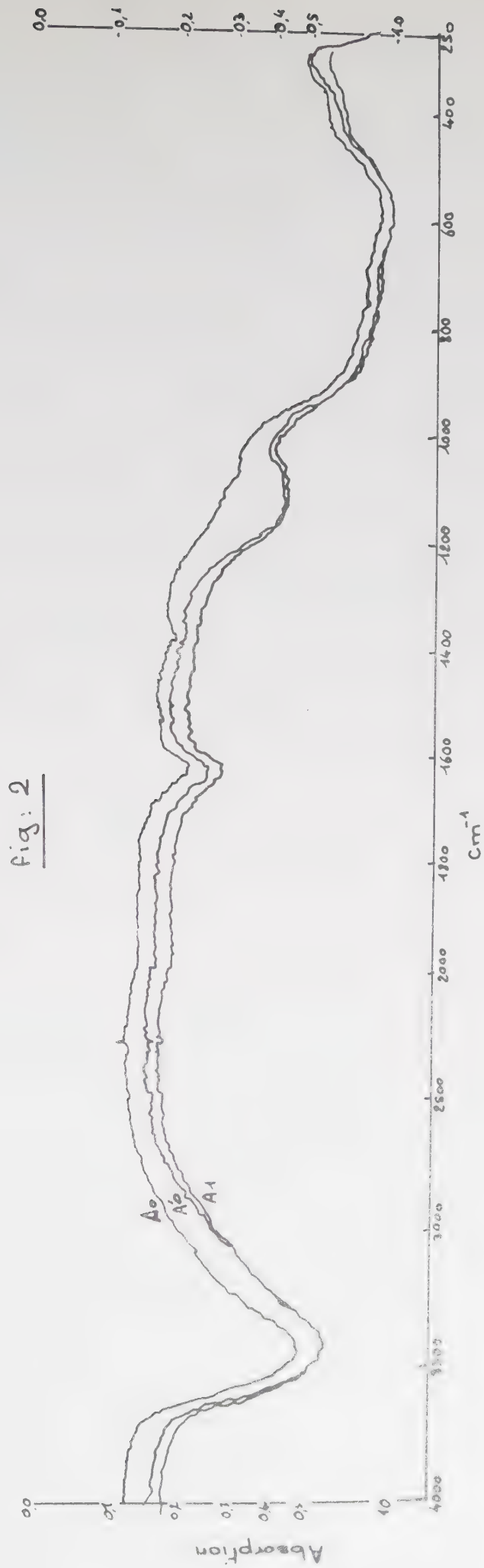
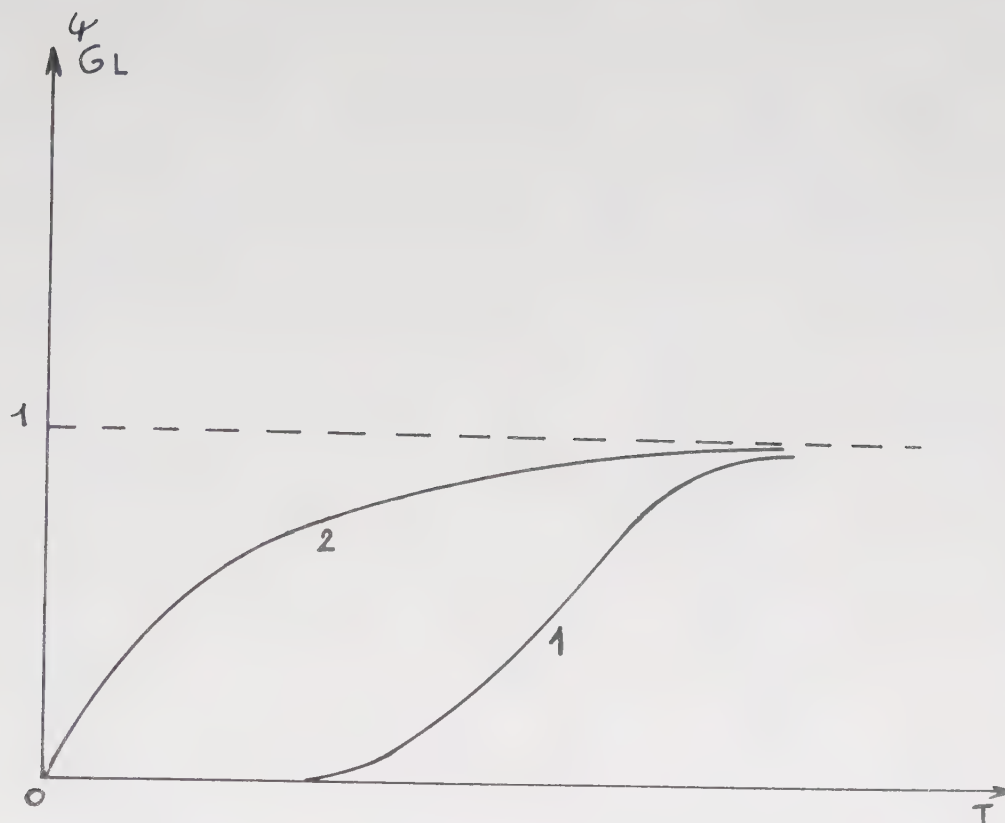


FIG: 3



Courbe d'élution 1) p petit

2) p Grand

Fig: 4

Courbes d'évolution théoriques pour

$p=0,1$ et $p=100$

